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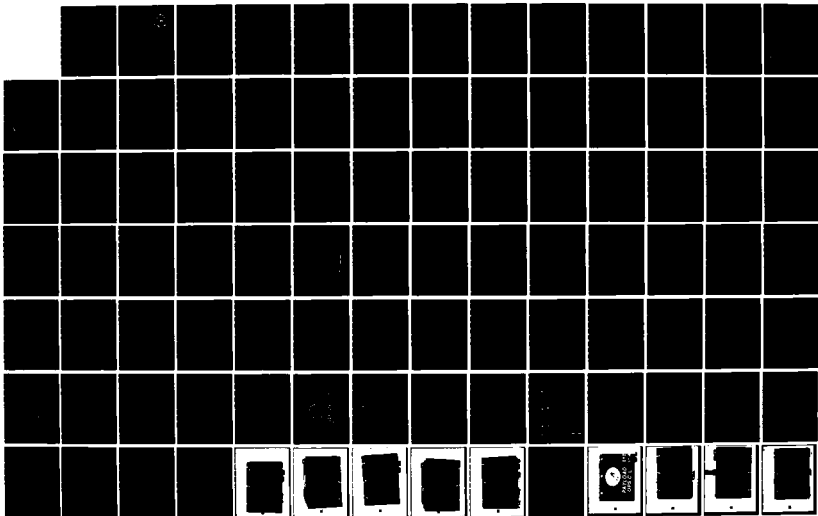
RESULTS FROM RADIATION MONITORING EQUIPMENT EXPERIMENTS
ON STS-41C 41D \$1... (U) AIR FORCE TECHNICAL APPLICATIONS
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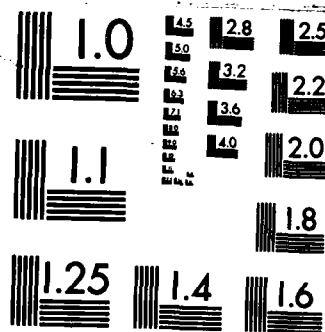
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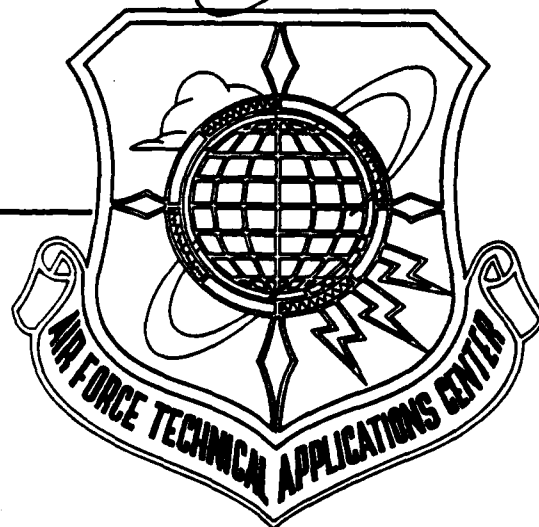
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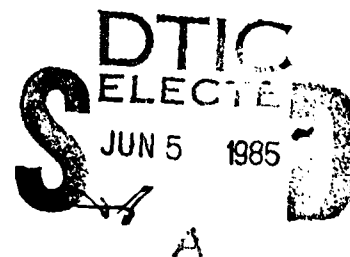
STEVEN E. CASH, RICHARD G. MADONNA,
MICHAEL R. MCCLELLAN, AND MARK E. FIELDS

18 APRIL 1985

FINAL REPORT.

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) The results from the Radiation Monitoring Equipment (RME) experiments, flown onboard STS-41C, 41D, 41G, and 51A are presented and discussed. The RME consists of the HRM-III gamma-ray counter and PRM neutron/proton dosimeter. The gamma-ray data agree with data from previous flights with somewhat higher readings on STS-41G. Large increases in count rates are observed when the Orbiter is in the South Atlantic and Southeast Asian Anomalies. Increases in count rate are also observed at higher latitudes. Neutron/proton dosage is consistent with NASA predictions. → cont keywords include:					
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SUMMARY

The Radiation Monitoring Equipment (RME) was flown on Space Shuttle Missions STS-41C, 41D, 41G, and 51A to provide in-cabin, real-time crew dosimetry, and to obtain time resolved gamma-ray background data and neutron/proton background data. The RME consists of two instruments, EG&G HRM-III gamma-ray counter and EG&G Pocket REM Meter (PRM) neutron/proton dosimeter. The HRM-III was operated by the astronaut crews 18 times during the four missions, with each operation lasting 52.5 minutes. The PRM was operated nine times with each operation lasting a minimum of approximately eight hours.

The results from the HRM-III operations are plotted as a function of time and as a function of ground position. The data show large increases in count rate during the periods when the Orbiter was in the South Atlantic and Southeast Asian Anomalies. Also, increases in count rate were observed as the orbit brought the Shuttle nearer the north or south poles. These data are consistent with data obtained from other missions.

The PRM results are displayed in tabular form. The average dose rate from these operations is .484 millirem per hour (mrem/hr) (.044 millirad per hour (mrad/hr)). The total mission neutron/proton dosages predicted by these readings are: STS-41C, 151.571 mrem (12.407 mrad); STS-41D, 33.914 mrem (3.333 mrad); STS-41G, 111.324 mrem (10.461 mrad); STS-51A, 44.9654 mrem (4.6979 mrad).

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SECTION I

INTRODUCTION

This report presents the results of the Radiation Monitoring Equipment (RME) experiments flown on STS-41C, 41D, 41G, and 51A. The objectives of the RME experiments are to provide in-cabin, real-time crew dosimetry and to obtain time resolved gamma-ray background data and neutron/proton background data.

The first objective was partially met during the flight of STS-6 (ref 1). The RME was flown for the first time on STS-6, and a limited amount of data was taken. The quality of the data was sufficient to convince us that the instruments will work in space, and, more importantly, that the crew can operate them and obtain meaningful data. Longer operations were required to fully meet the first objective since the instruments were not utilized to their fullest extent during the STS-6 mission.

The second objective was also achieved, in part, during the STS-6 mission. The neutron/proton dosimeter, EG&G's Pocket REM Meter (PRM), was operated for sufficiently long periods of time and gathered meaningful background data. The gamma-ray counter, EG&G's HRM III, was only operated for 10 seconds each time it was activated and did not yield enough background data to meet the second objective.

The STS-8 and STS-11 flights (ref 2 and 3) provided opportunities to meet both objectives of the RME experiments. During these flights, the HRM-III was operated a total of 11 times with each operation lasting 52.5 minutes. The PRM was operated four times with each operation lasting a minimum of 10 hours.

During the STS-6, 8, and 11 flights, the RME data convinced us that the crew can operate the RME to obtain valuable data. During STS-41C, 41D, 41G, and 51A, the RME provided real-time crew dosimetry capability and obtained time resolved gamma-ray background data and neutron/proton background data. During these flights, the HRM III was operated for a total of 15.75 hours and the PRM was operated for a total of 116.5 hours.

SECTION II

EQUIPMENT

HRM-III.

The HRM-III (Figure 1) (ref 4) is a hand-held gamma-ray counter. It weighs approximately 1 kilogram (2.2 pounds) and is about the size of a small cassette recorder. The circuitry is all solid state and microprocessor controlled. The detector is a mercuric iodide (HgI_2) crystal with a detection threshold of 100 kiloelectronvolts (keV).

The HRM-III has 105 internal memories that can store counting data for playback at a later time. These memories are filled with the average counts obtained during a user determined time interval. The interval can vary from 1/3 of a second to 33 seconds. Playback of the stored data is accomplished through a liquid crystal display (LCD) on the HRM-III. This record-playback feature allows for a time-history of the gamma-ray counts without having a user continually monitoring the instrument. (For a more complete description of the HRM-III, see reference 4).

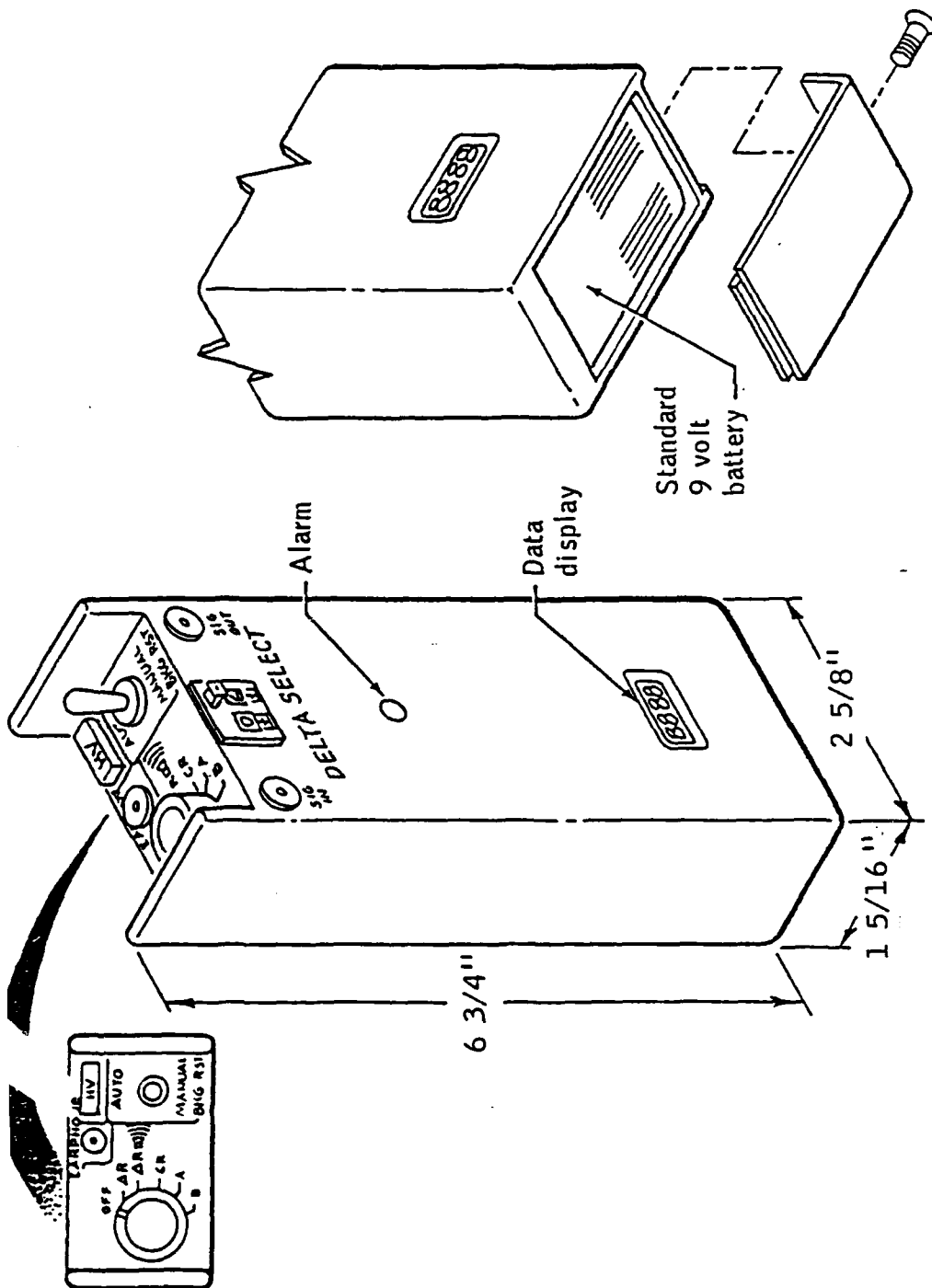
PRM.

The PRM (Figure 2) (ref 5) is a hand-held neutron/proton dosimeter. It weighs approximately 1 kilogram (2.2 pounds) and is slightly larger than the HRM-III. The PRM has microprocessor controlled solid state circuitry. It uses three ionization tubes as detectors. These tubes are surrounded by a tissue equivalent plastic. The associated electronics then produce data in the form of counts, rads and rems in real time.

Data are obtained via a LCD. The PRM will read out either hours (elapsed time since turn-on), counts, rads, or rems by changing the position of a rotary switch. The LCD displays the current value of the function (hours, counts, rads, rems) chosen and the LCD readout is updated as the value changes. Thus the PRM is a real time dosimeter. (For a more complete description, see reference 5).

Crew Training.

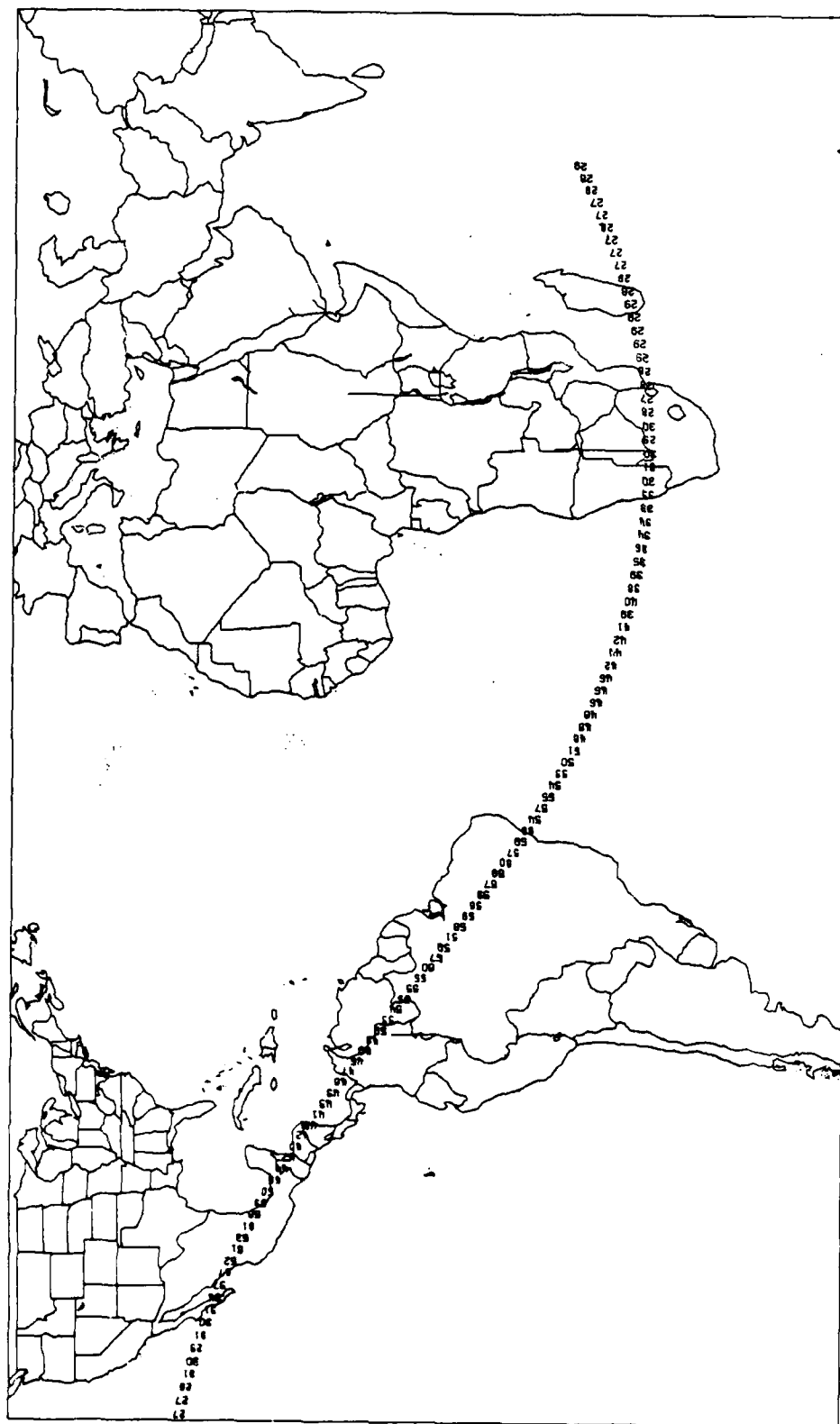
Crew training on the RME was accomplished at Johnson Space Center. The crews received a briefing on the instruments and were allowed to operate them. During this training briefing, questions that the crews had on the operation of the instruments were answered. The crews then practiced with two training units at Johnson Space Center.



Handheld Radiation Monitor (HRM-III)

Figure 1.

OPERATION NO. 2



STS41-0

Figure 14

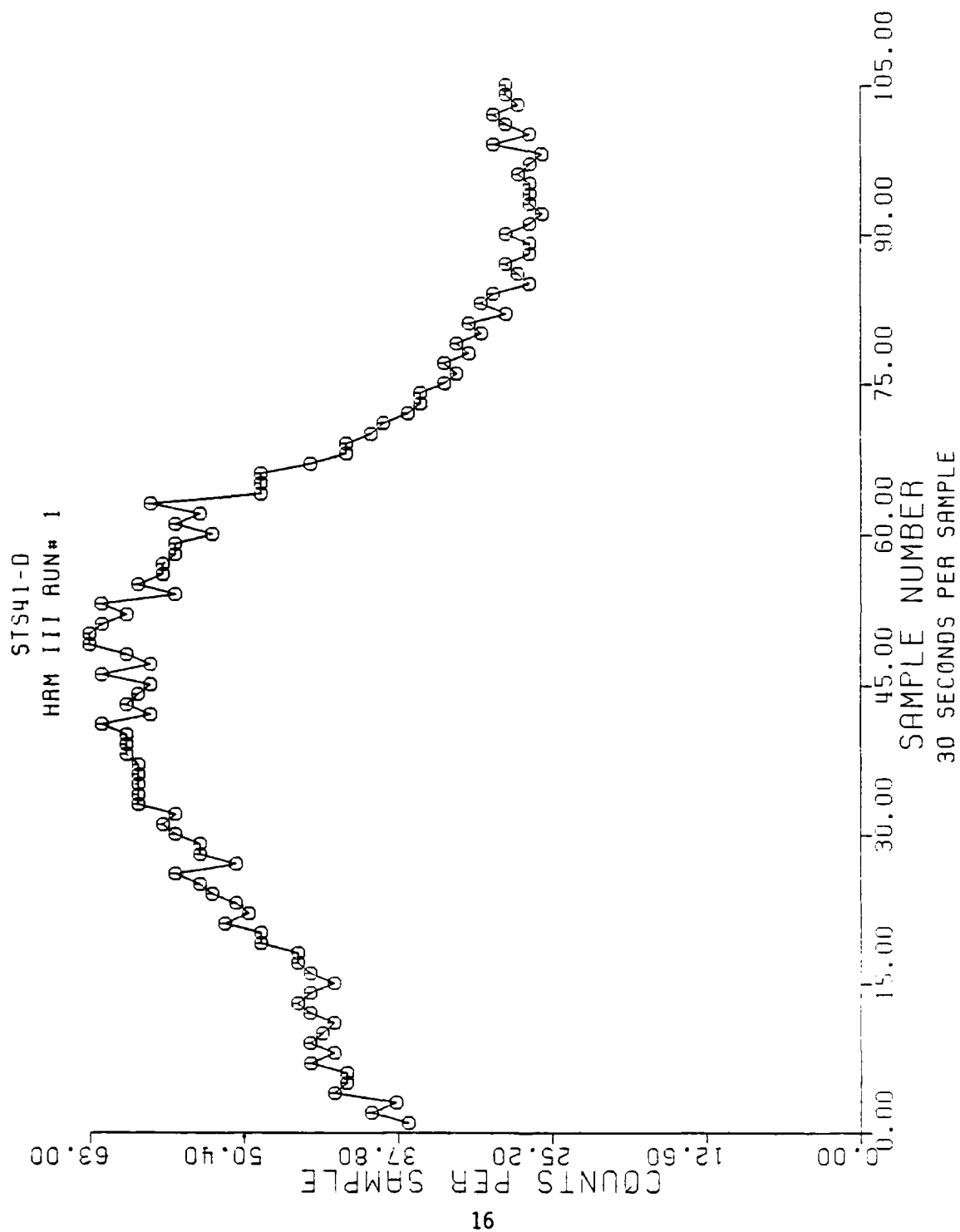
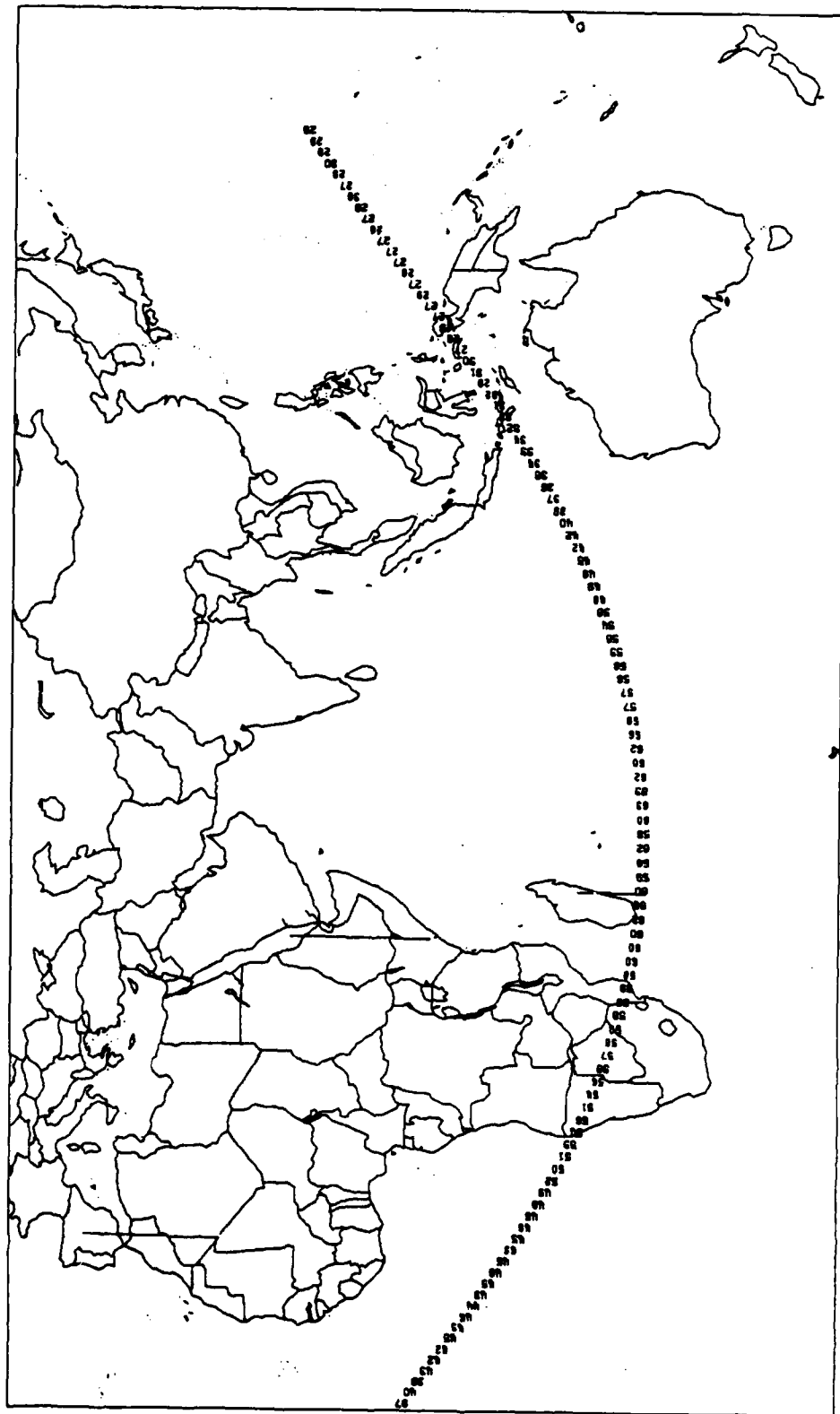


Figure 13

HRM-III

OPERATION NO. 1



STS41-0

Figure 12

① = RUN # 1
 Δ = RUN # 2
 + = RUN # 3
 X = RUN # 4

STS-41C
COMPOSITE

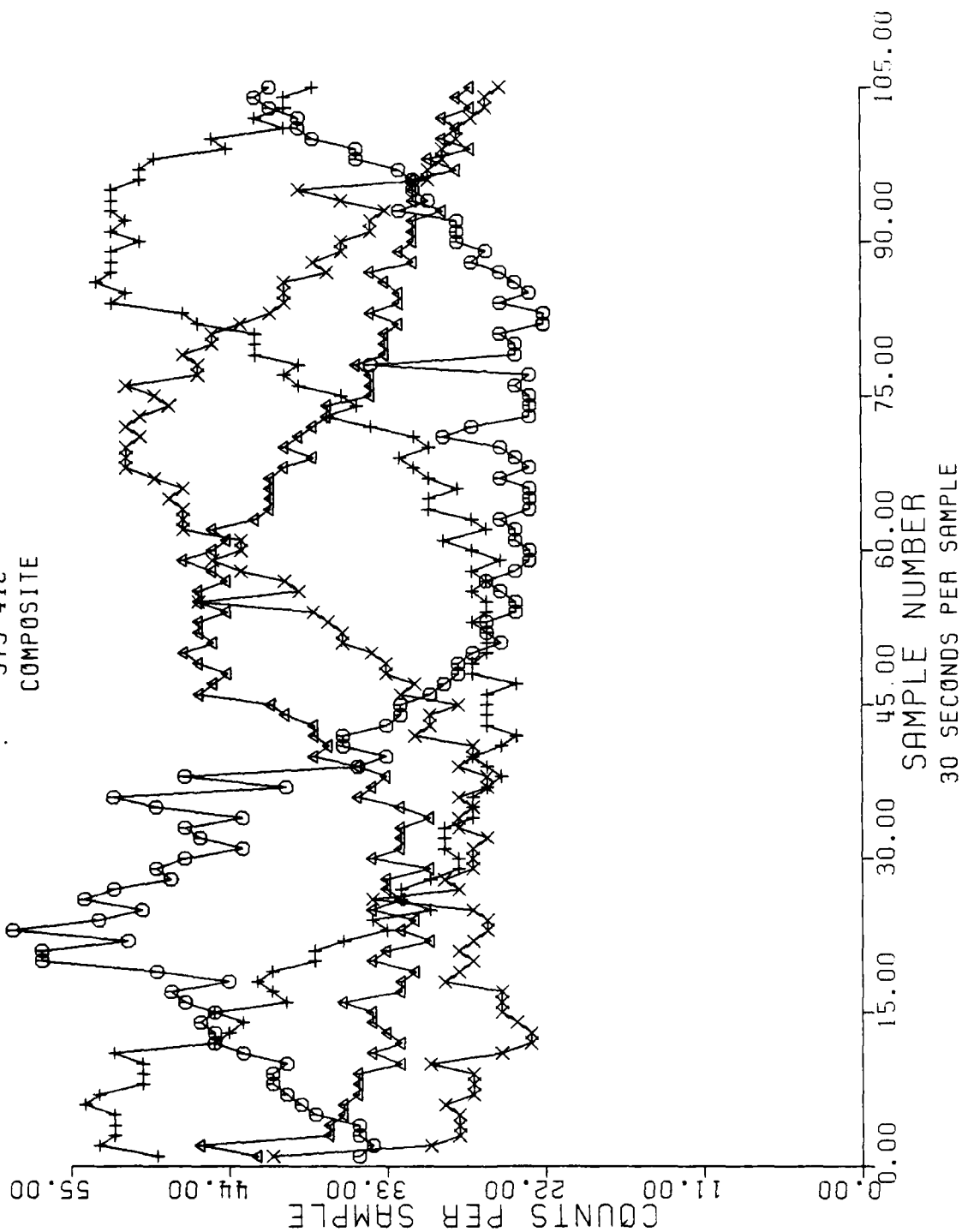
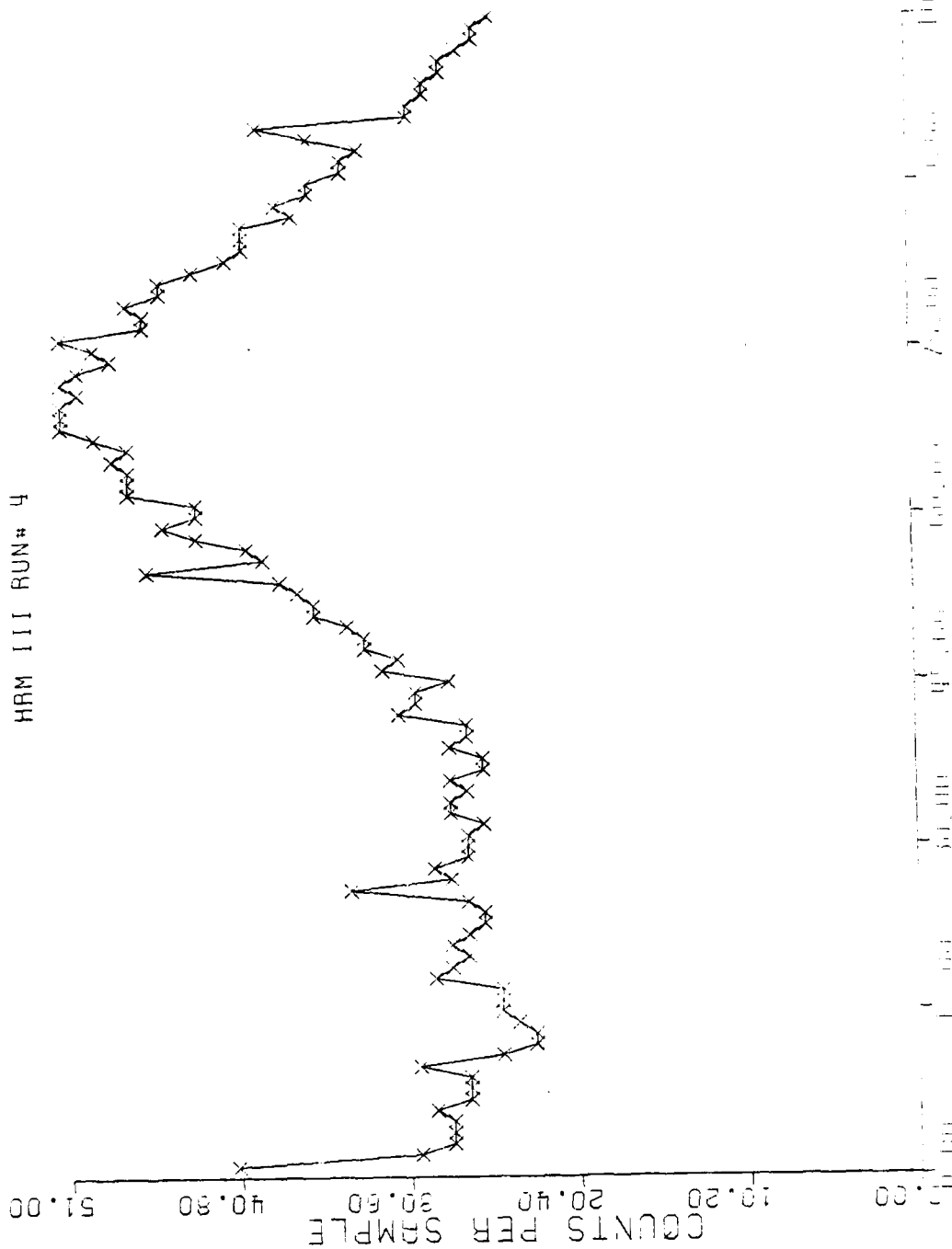


Figure 11

SIS-41C
HRM 111 RUN# 4



75.00 70.00 65.00 60.00 55.00 50.00 45.00 40.00 35.00 30.00 25.00 20.00 15.00 10.00 5.00 0.00

SAMPLE NUMBER
30 50 60 70 80 90 100

Figure 10

MISSION 41C STS13
HRM III RUN #4

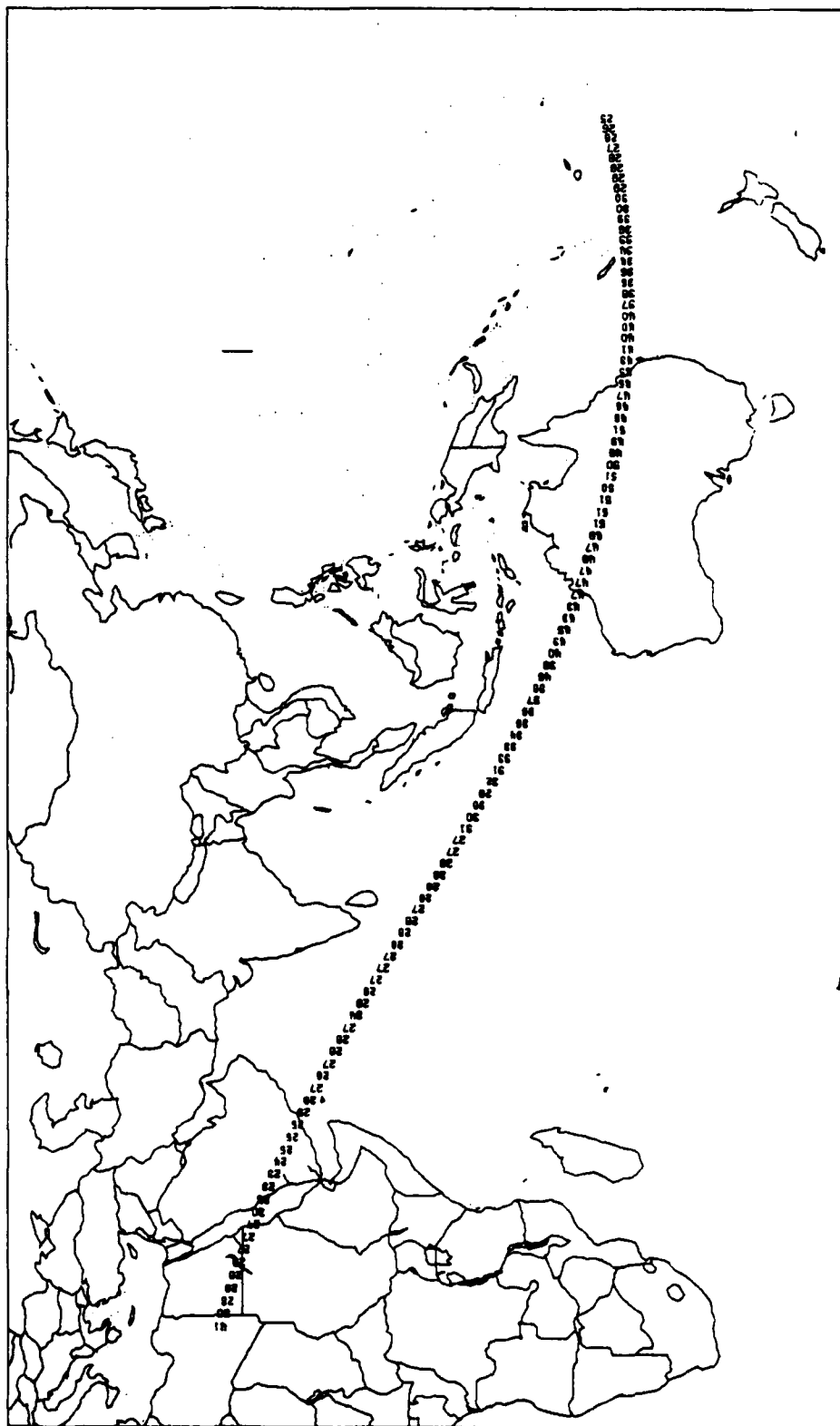


Figure 9

STS-41C
HRM III RUN# 3

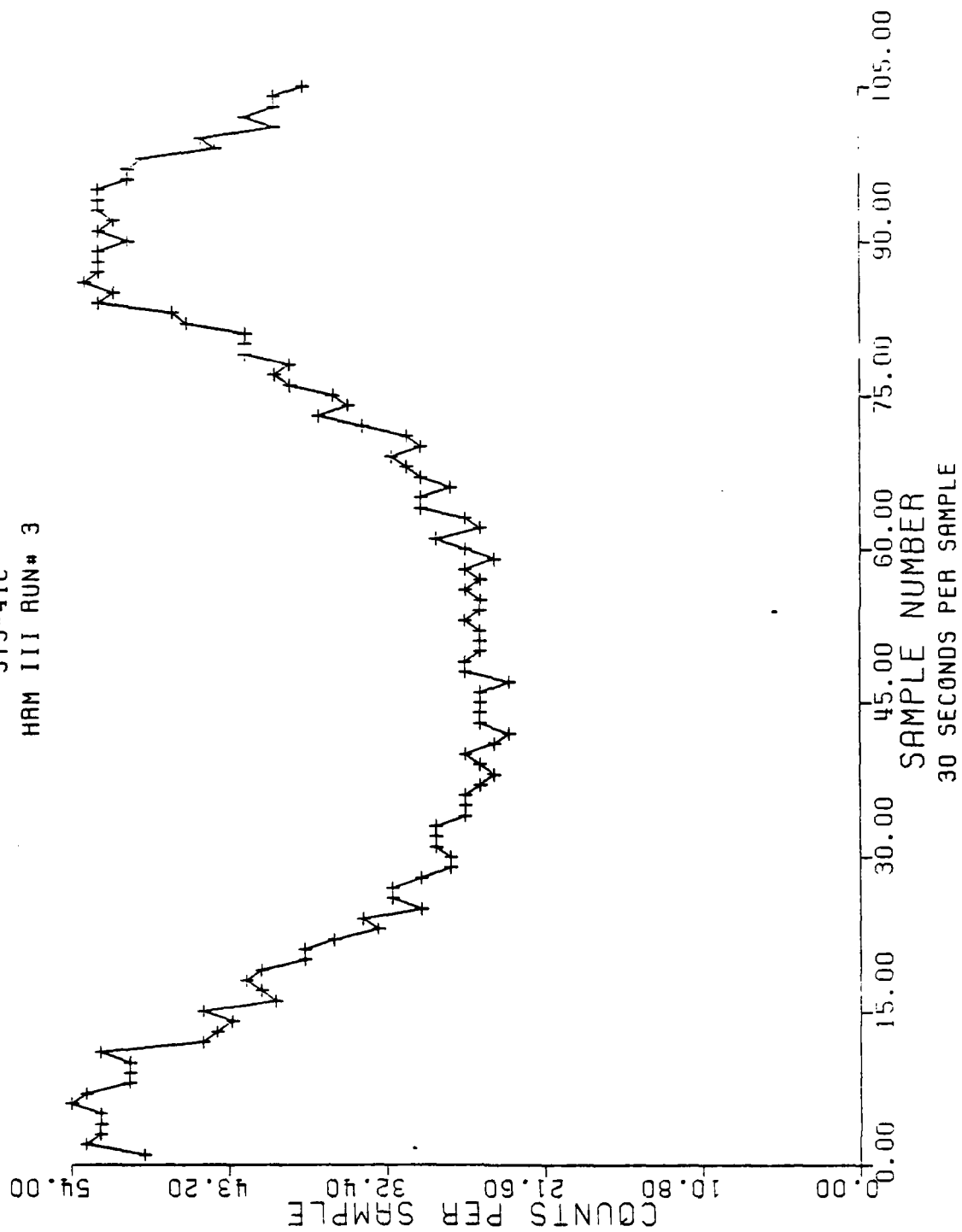


Figure 8

MISSION 41C STS13
HRM III RUN #3

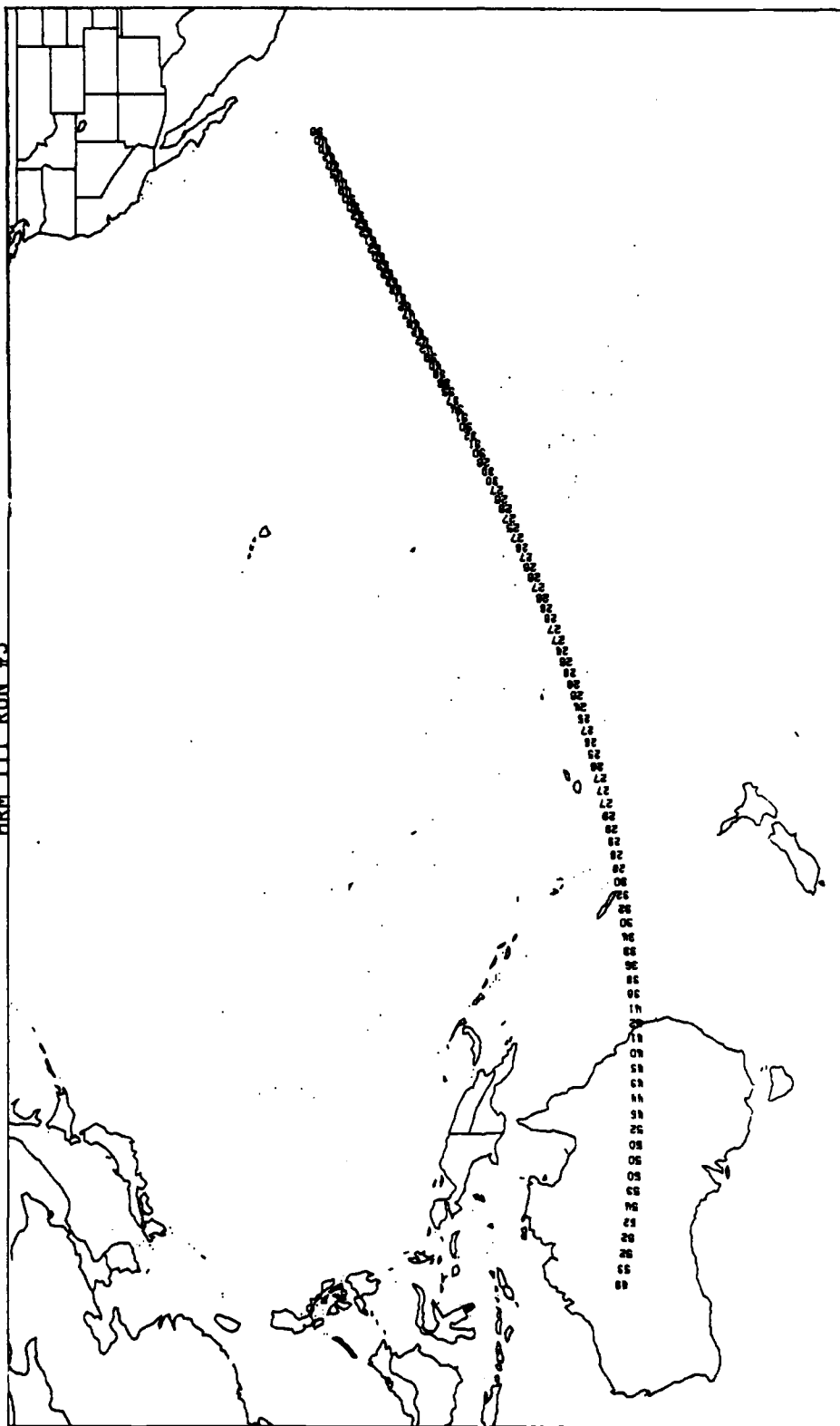


Figure 7

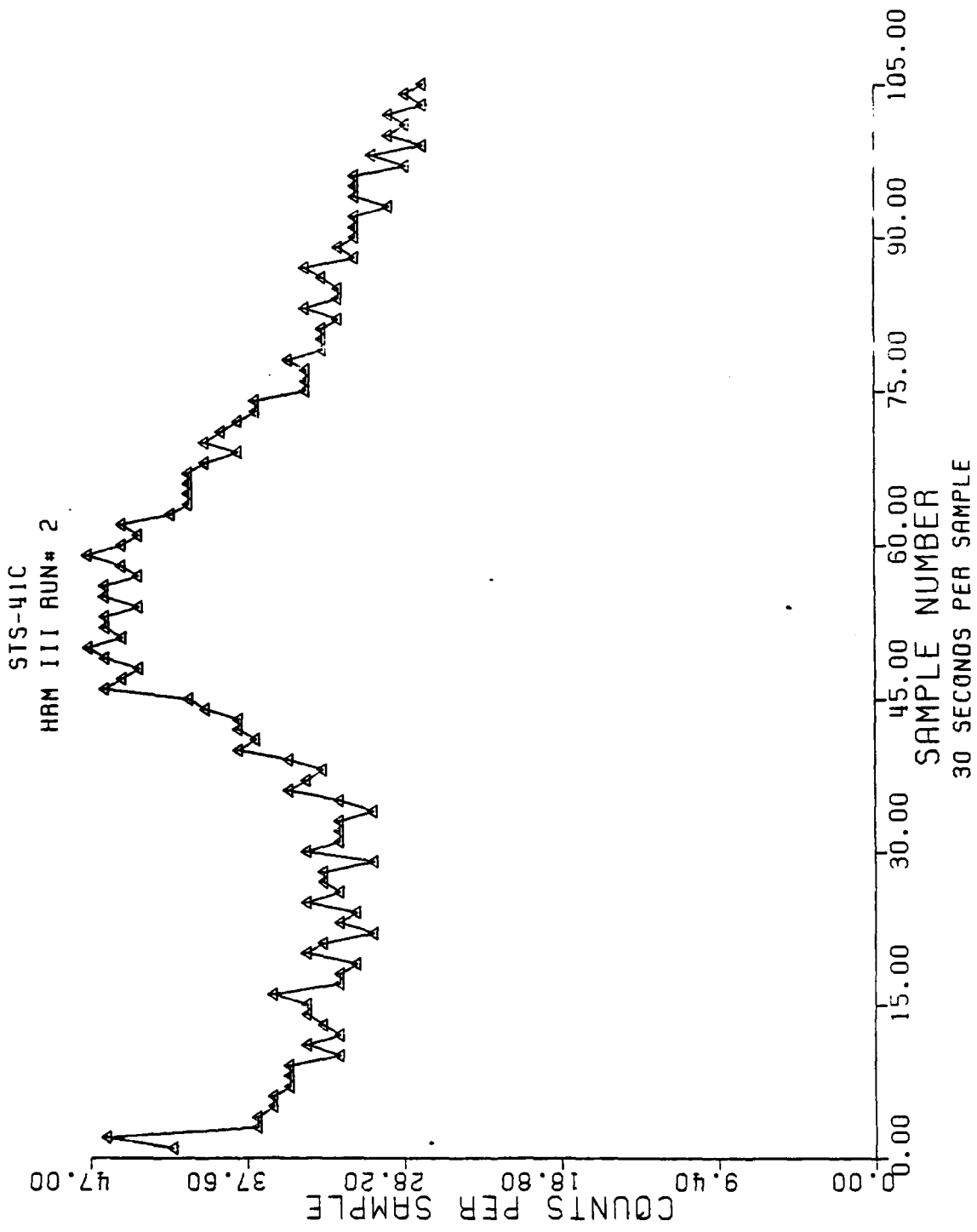


Figure 6

MISSION 41C STS13
HRM III RUN# 2

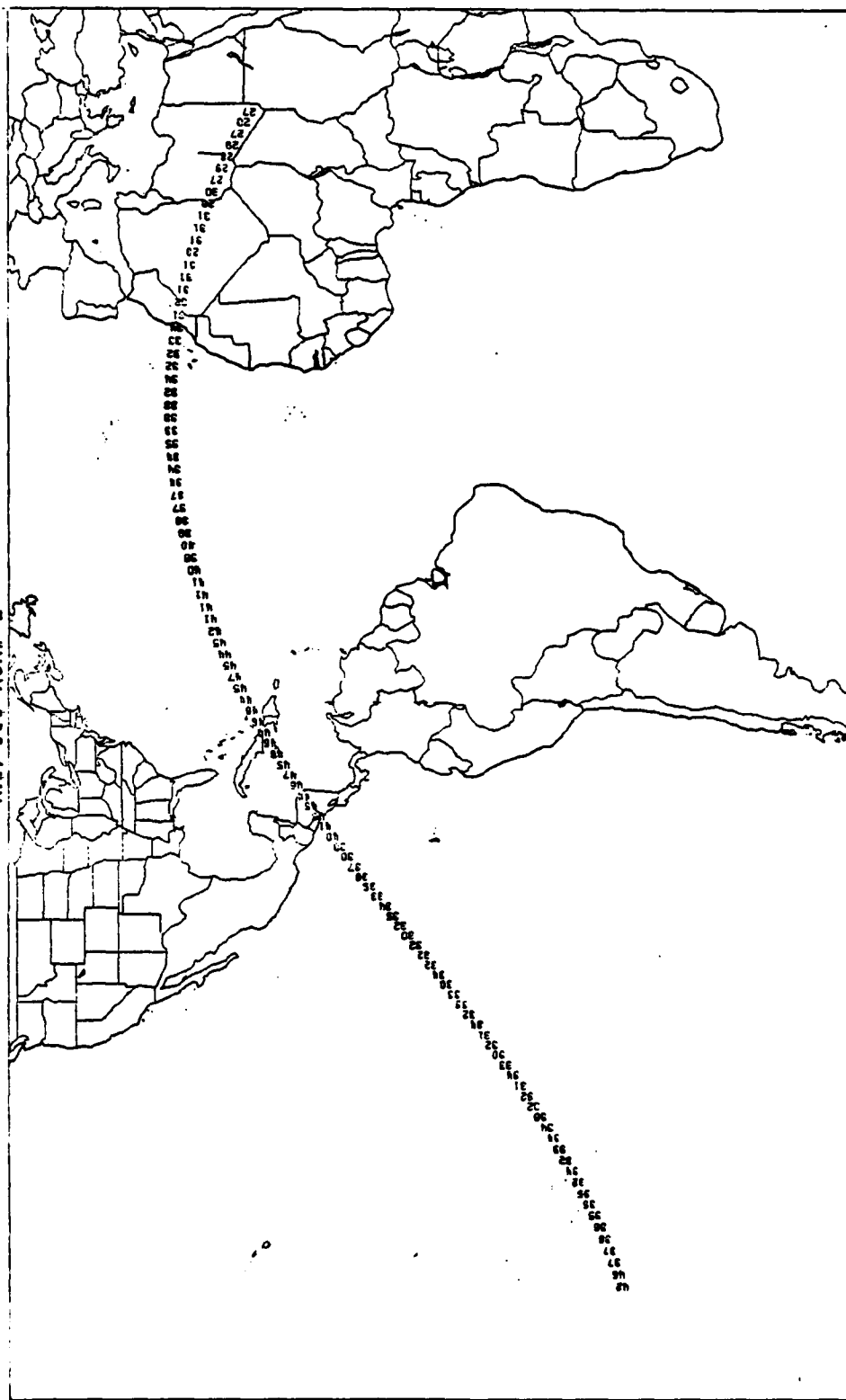


Figure 5

STS-41C
HRM III RUN# 1

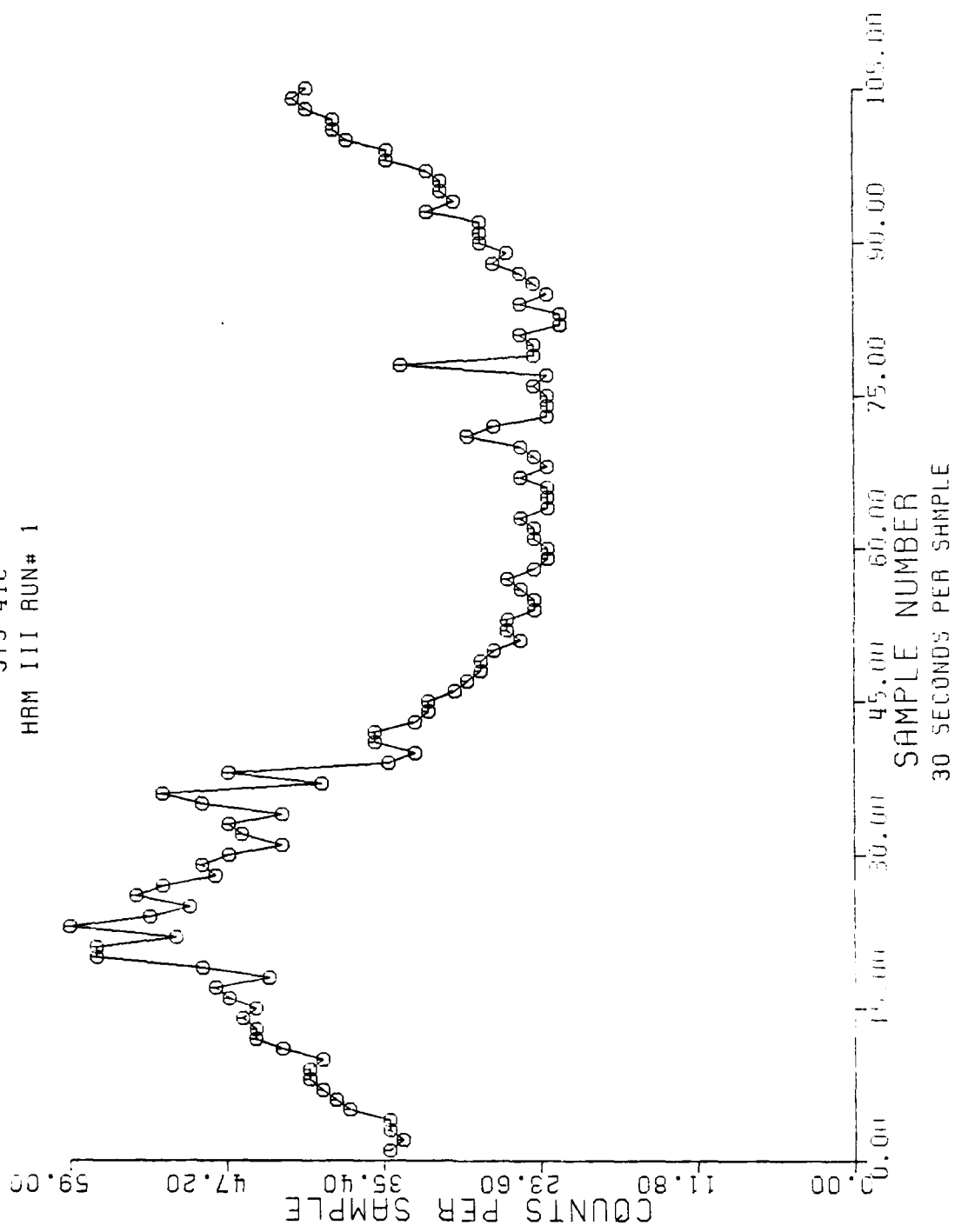


Figure 4

MISSION 41C STS13
HRM III RUN# 1

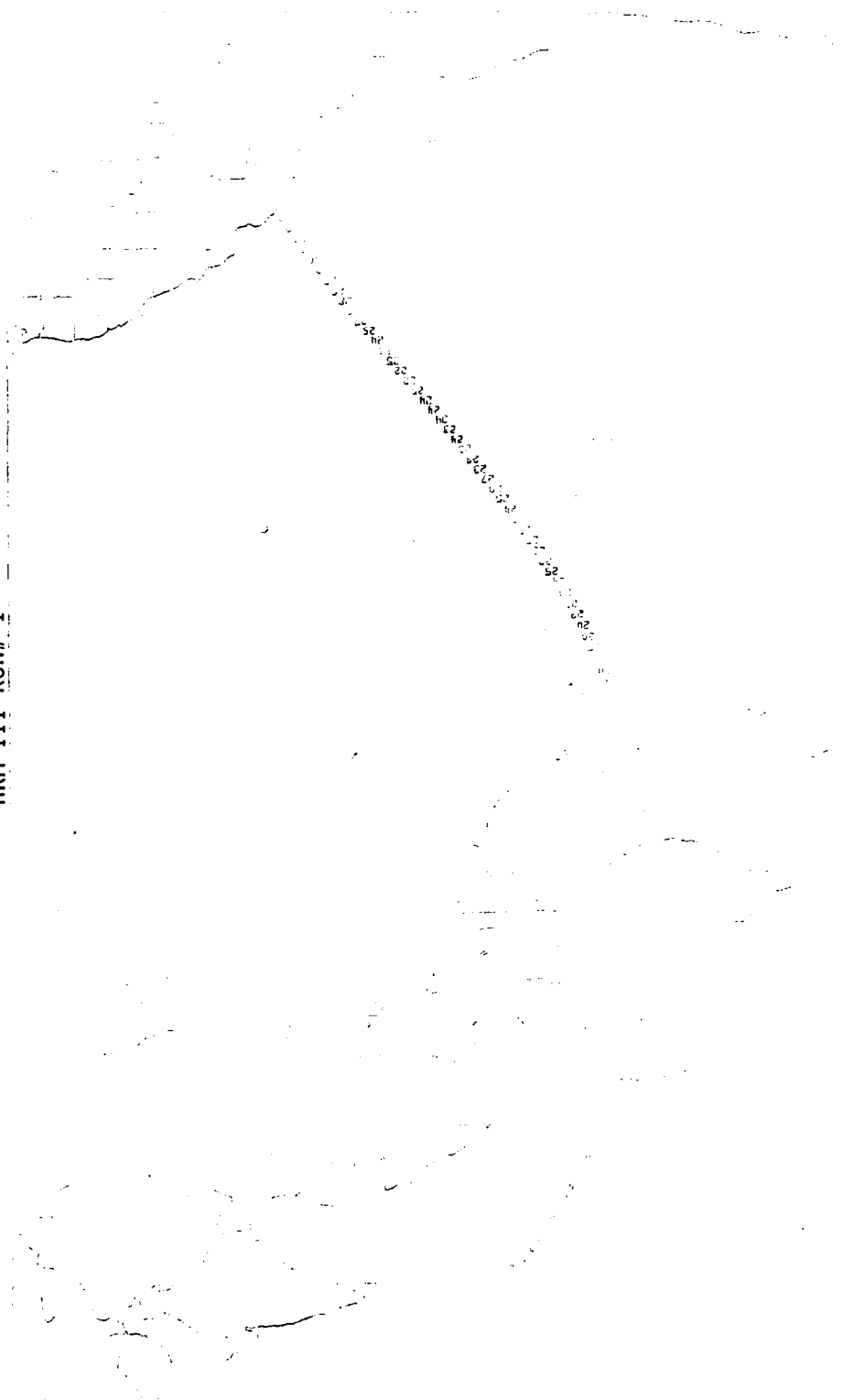


Figure 3

SECTION III

RESULTS

HRM-III.

During the STS-41C, 41D, 41G, and 51A flights, each HRM-III operation lasted 52.5 minutes with the device configured to fill one memory location every 30 seconds. For each flight, the data are presented in two ways. First, average counts per second are plotted on a map of the world, based on the Orbiter's subpoint. Second, average counts per second are plotted against elapsed time since device activation.

STS-41C.

The HRM-III was operated four times during STS-41C. The device performed well with no anomalies experienced.

Figures 3, 5, 7, and 9 show average counts per second plotted on a world map. Figures 4, 6, 8, 10, and 11 show average counts per second plotted against elapsed time.

The four operations produced very similar data. Low count rates are all experienced around the equator and fall between 22 and 27 counts per second. High count rates occur at the higher latitudes and fall between 47 and 59 counts per second.

STS-41D.

The HRM-III was operated six times during STS-41D with no anomalies experienced.

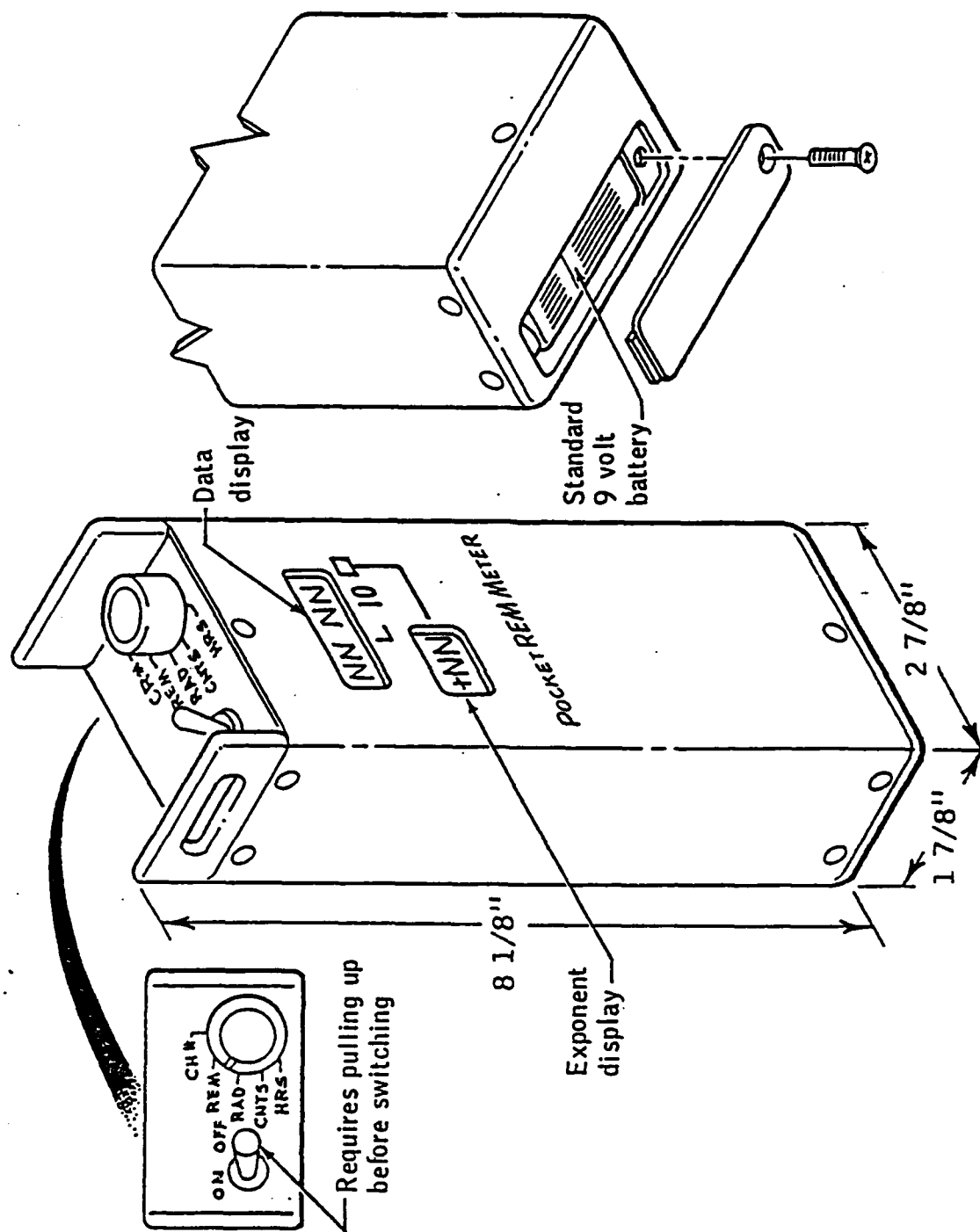
Figures 12, 14, 16, 18, 20, and 22 show average counts per second plotted on a world map. Figures 13, 15, 17, 19, 21, 23, and 24 show average counts per second plotted against elapsed time.

The most significant aspect of the data was seen in run #5 (Figures 20 and 21) when the Orbiter passed through the Southeast Asian Anomaly. Approximately midway through this data take, average count rate rose from 38 counts per second to a high of 117 counts per second and dropped back down to 59 counts per second during a period of 12.5 minutes.

Data from runs 1, 2, 3, 4, and 6 are unremarkable with average count rates ranging from a low of 21 counts per second to a high of 68 counts per second.

STS-41G.

The HRM-III was operated four times during STS-41G. Once again, the device performed well with no anomalies experienced.



Pocket REM Meter (PRM)

Figure 2.

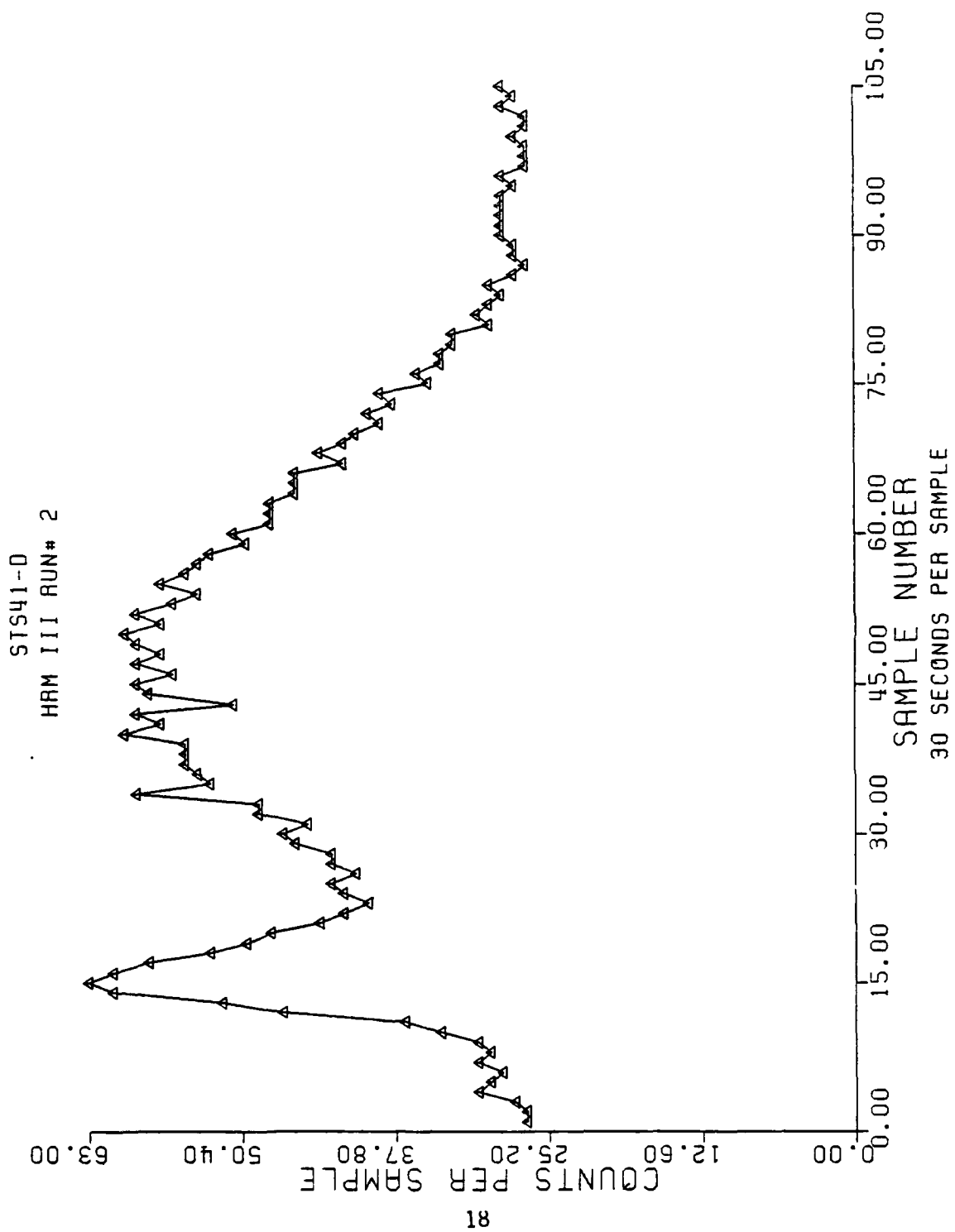
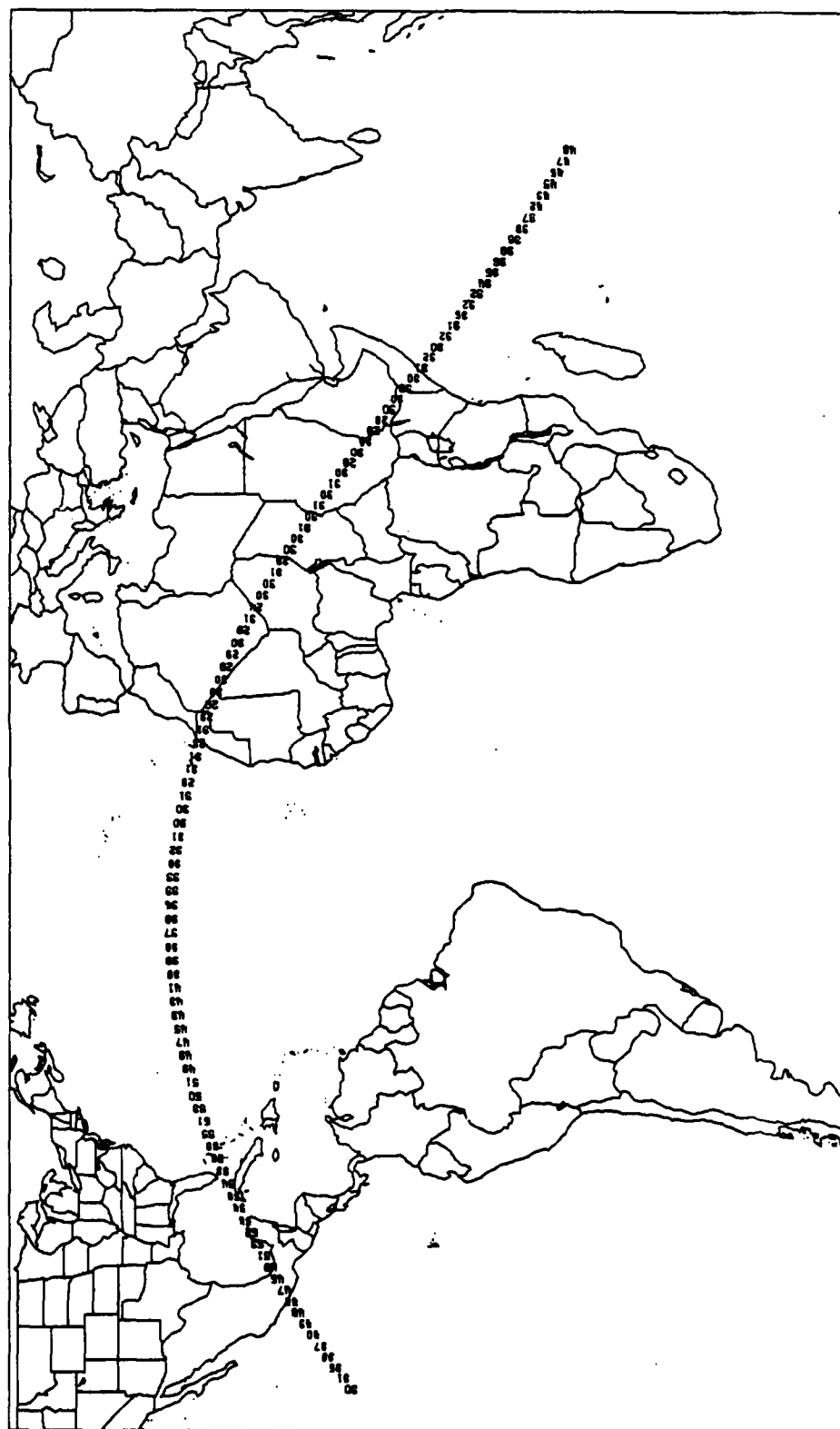


Figure 15

HRM-III

OPERATION NO. 3



STS41-0

Figure 16

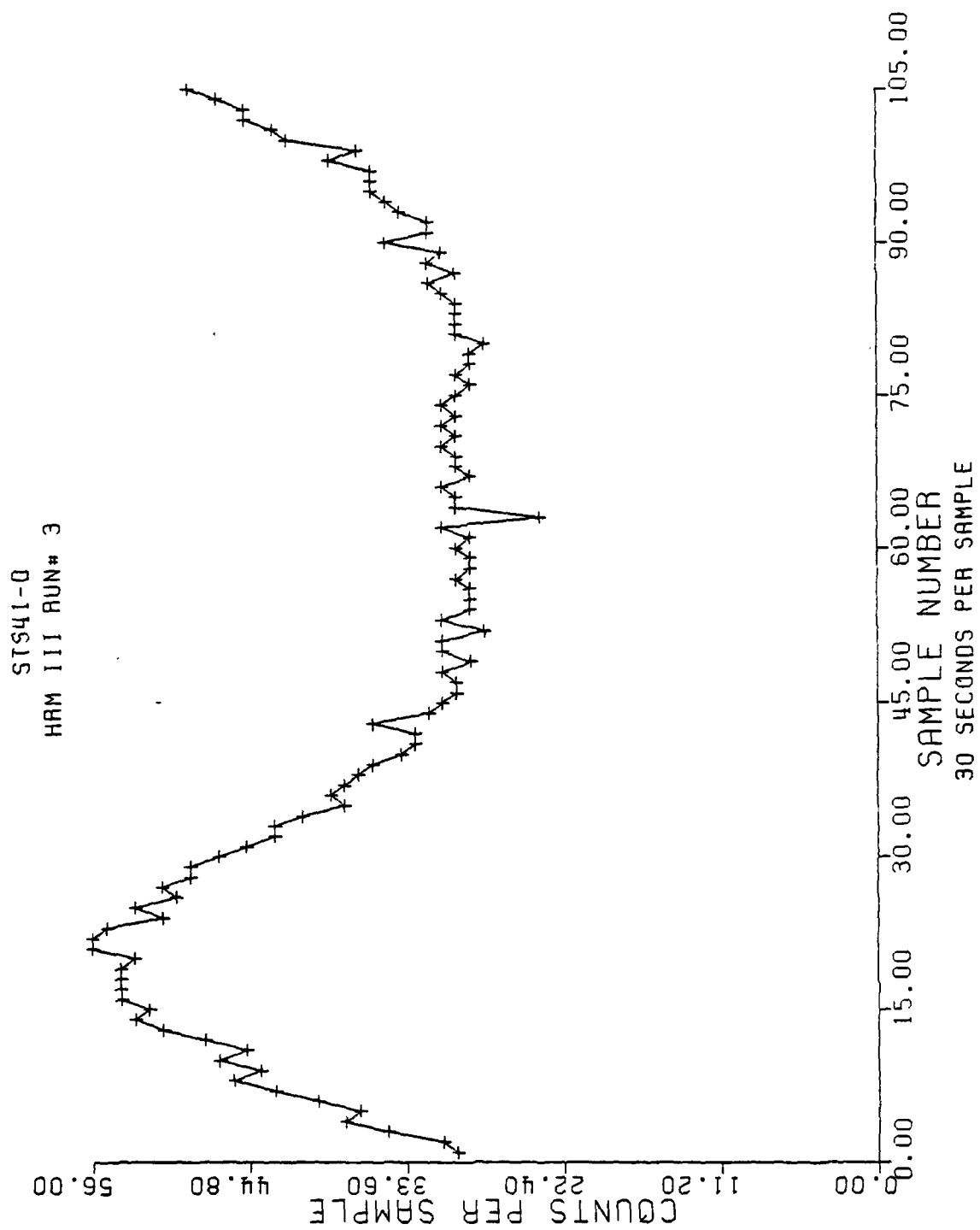
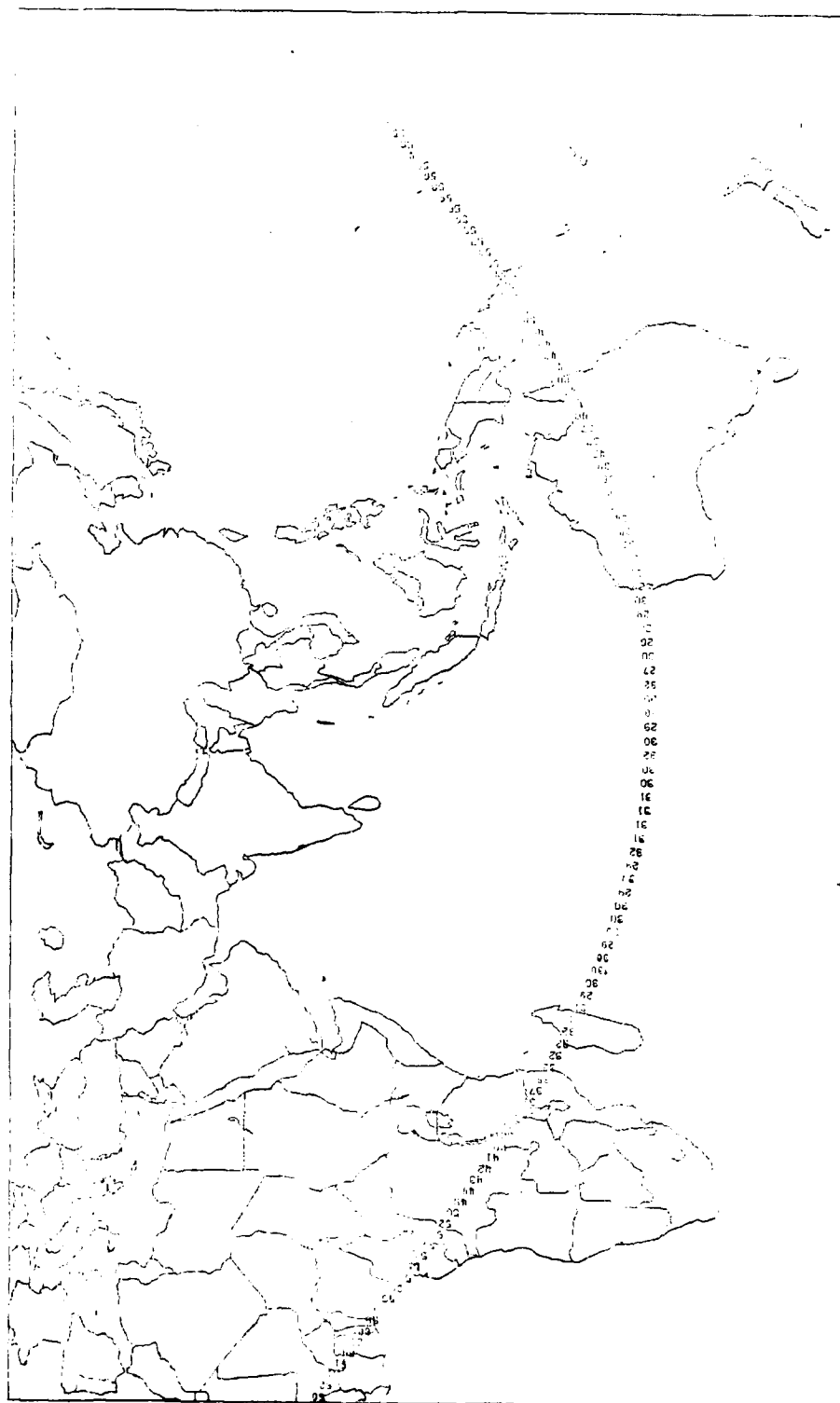


Figure 17

HRM-III

OPERATION N.J. 4



STST-1-D

Figure 18

STS41-D
HRM III RUN# 4

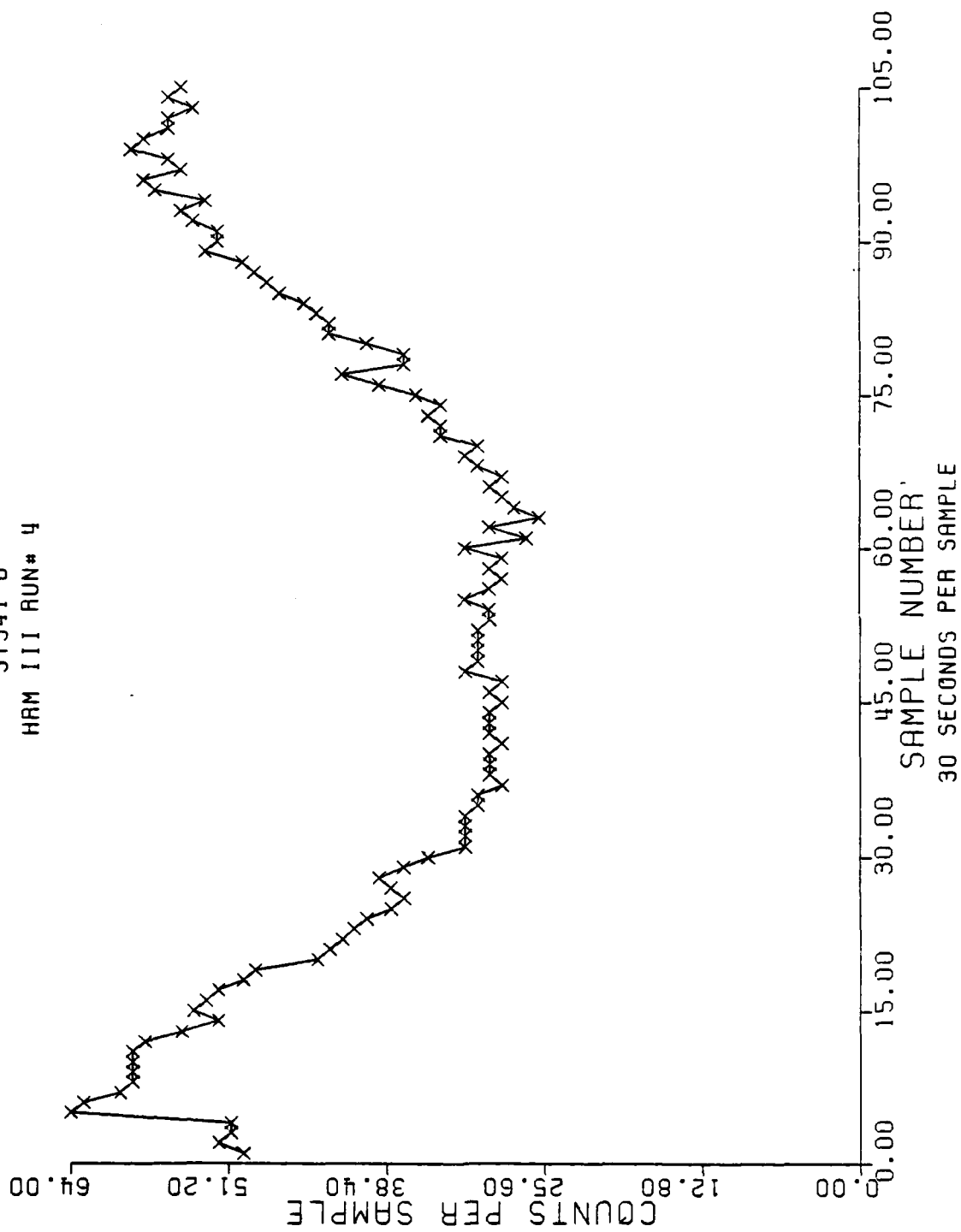


Figure 19

Figure 19

Geological Map

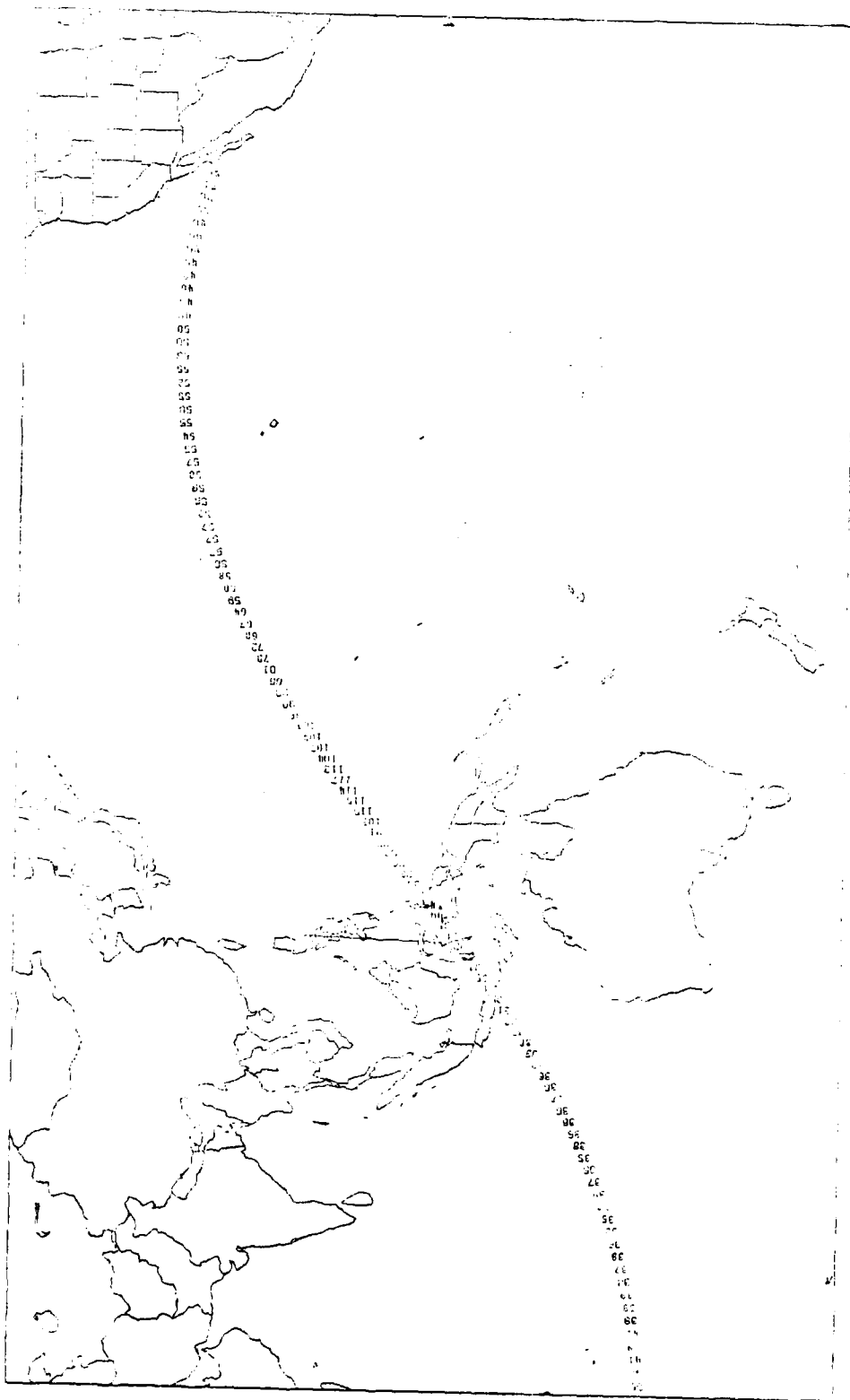


Figure 20

Figure 20

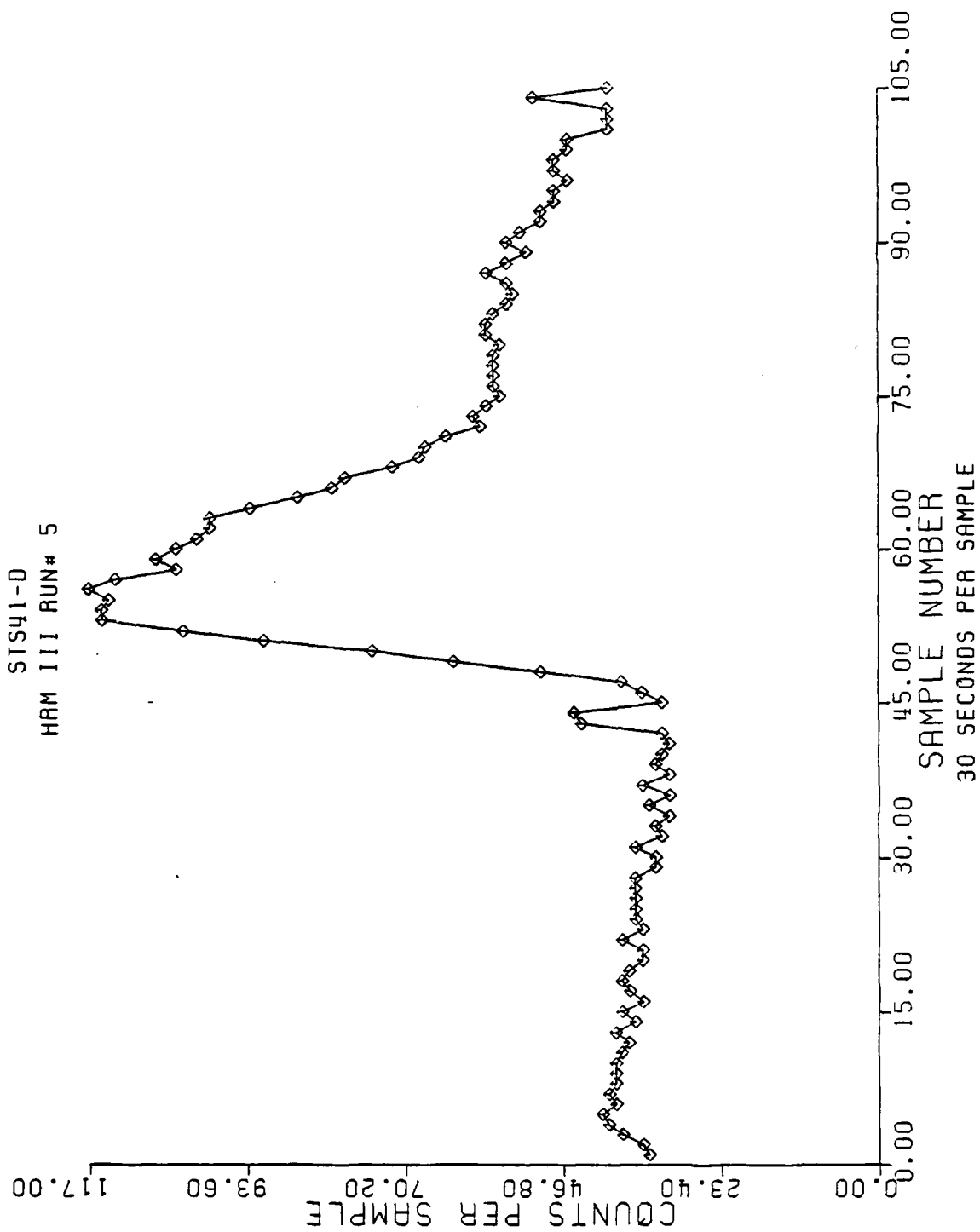


Figure 21

HA-111

OPERATION NO. 1



HA-111

Figure 22

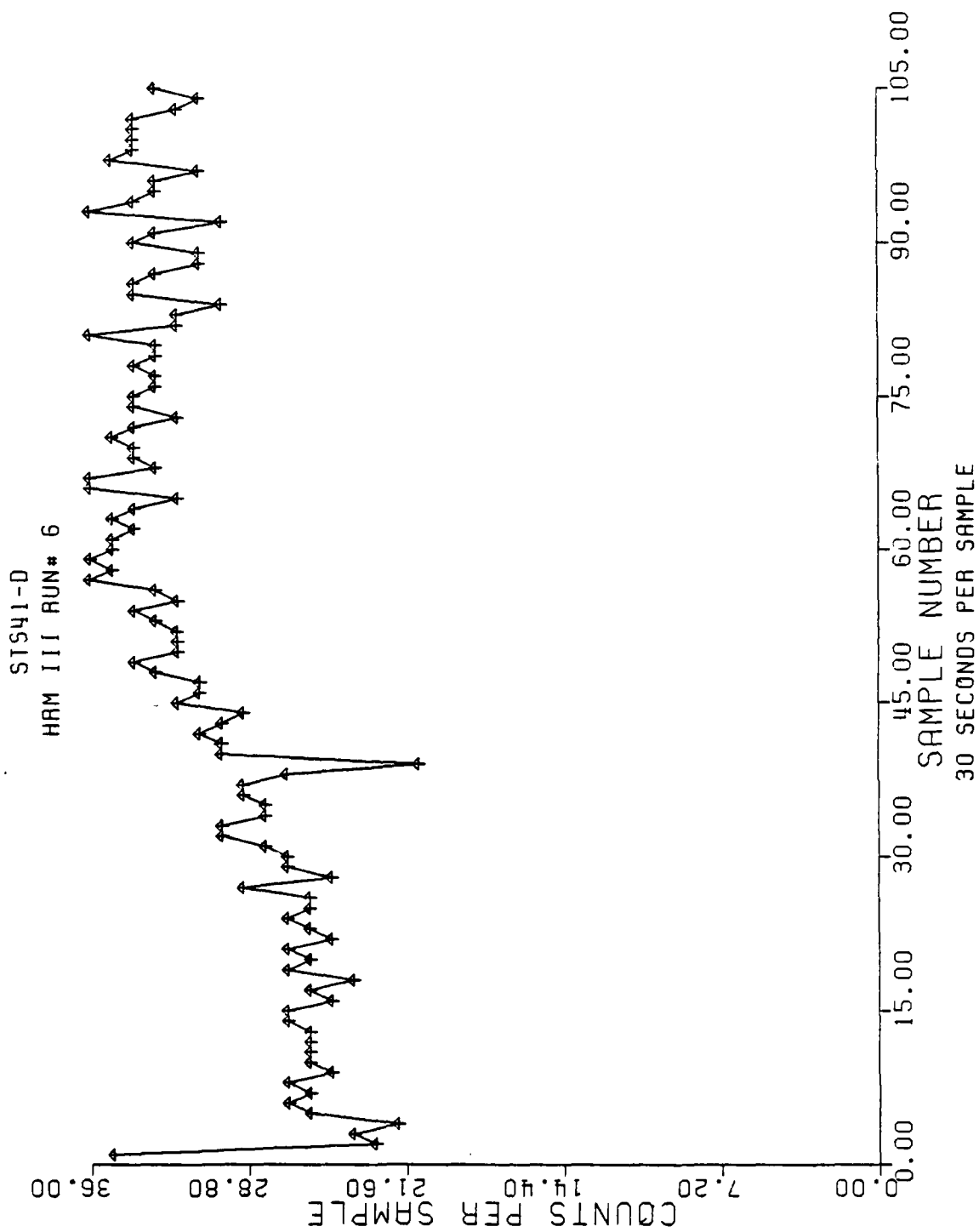


Figure 23

1
= RUN #
2
= RUN #
3
= RUN #
4
= RUN #
5
= RUN #
6
= RUN #

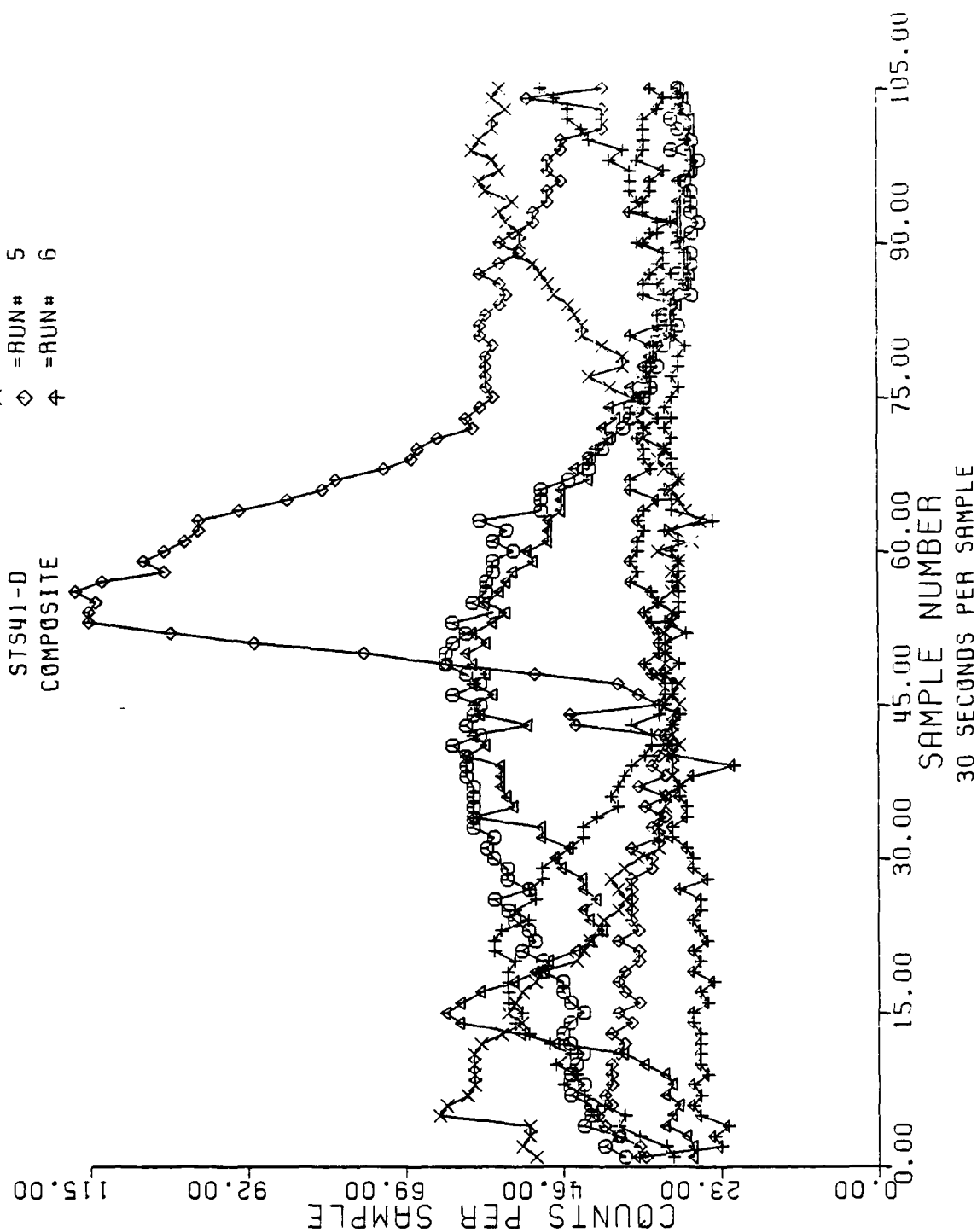


Figure 24

Figures 25, 27, 29, and 31 show average counts per second plotted on a world map. Figures 26, 28, 30, 32, and 33 show average counts per second plotted against elapsed time.

The inclination of the STS-41G orbit was 57°, whereas the inclinations of STS-41C, 41D, and 51A were 28.5°. Data taken at the higher latitudes covered by STS-41G show significantly higher count rates than those of the lower inclination orbits. There is a greater population of trapped particles at higher latitudes and the increased interaction of the particles with the Orbiter results in higher levels of nuclear radiation.

Another interesting characteristic of the data was seen during operation #1. Near the end of the data take, the average count rate increases dramatically to a high of 2518 counts per second. These readings, the highest of any of the RME Shuttle experiments are clearly the result of passing through the South Atlantic Anomaly.

During operation #3 (refer to figures 29 and 30), a severe spike in count rate occurred near the beginning of the run. The readings for four consecutive sampling periods were 324, 2227, 761, and 146 counts per second. The unusual appearance, that is the narrow width of the spike, is attributed to the effect of the 30 second sampling period of the HRM-III as configured for these experiments. Better resolution of this data would have required a finer sampling rate.

STS-51A.

The STS-51A crew performed four HRM-III operations. No anomalies were experienced.

Figures 34, 36, 38, and 40 show average counts per second plotted on a world map. Figures 35, 37, 39, 41, and 42 show average counts per second plotted against elapsed time.

For the most part, HRM-III data from this flight are unremarkable. Average count rates for the four operations range from a low of 23 counts per second to a high of 63 counts per second. A pass through the Southeast Asian Anomaly is evident in operation number one where average count rate climbs gradually from 27 counts per second over Australia to a high of 58 counts per second and then falls down to 31 counts per second near the Pacific coast of Mexico (see figure 34).

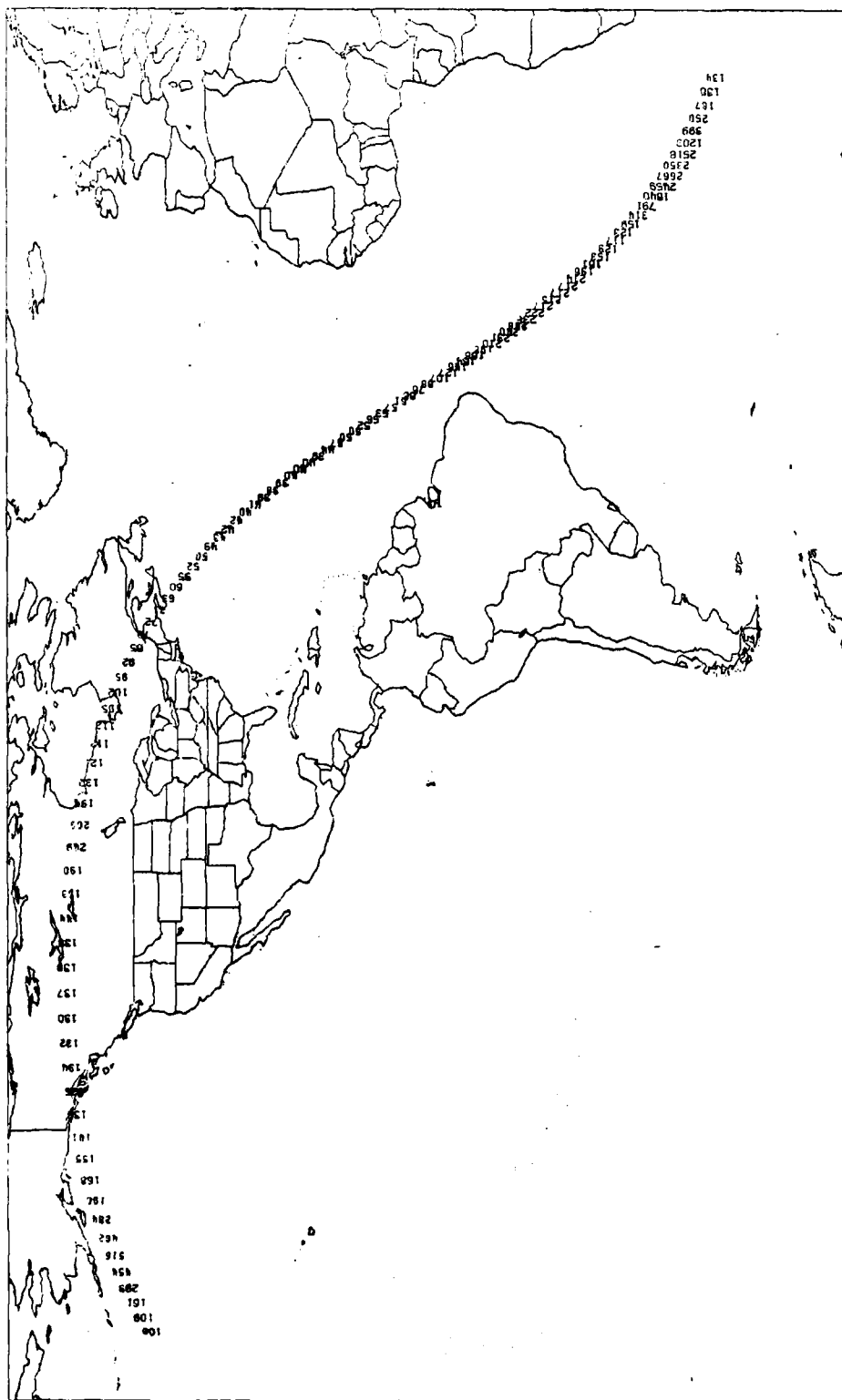
PRM.

During the STS-41C, 41D, 41G, and 51A flights, ten PRM operations were attempted. The first operation during STS-41C failed, presumably due to a low battery. All other data takes were successful. PRM data are presented in tables 1 through 8.

PRM operations on all four flights lasted between 7.95 and 17.65 hours. Average dose rates for these operations ranged between .211 mrem/hr (.0217 mrad/hr) and 1.2421 mrem/hr (.1025 mrad/hr), and estimated total mission

HAN-III

OPERATION NO. I



STS41-G

Figure 25

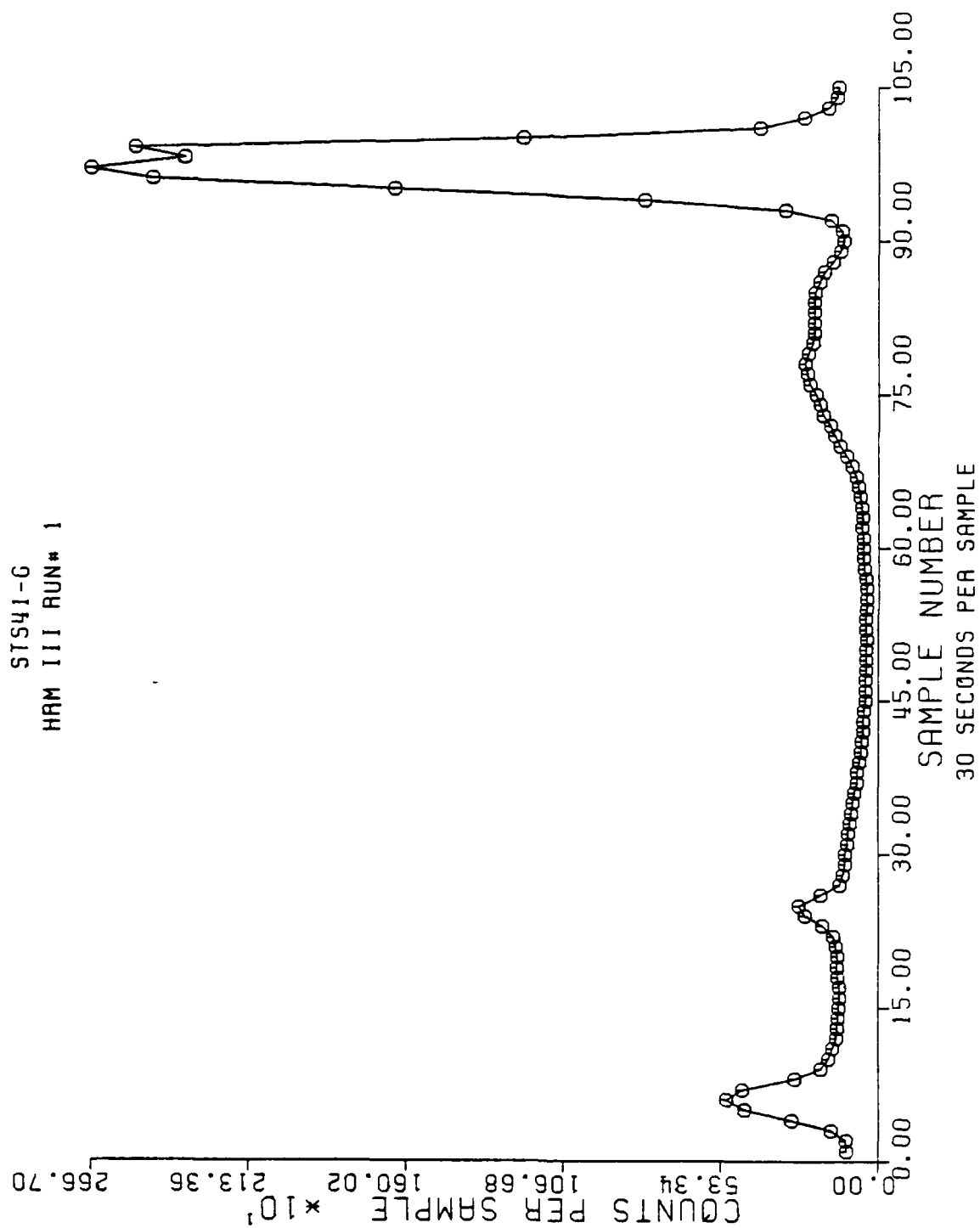
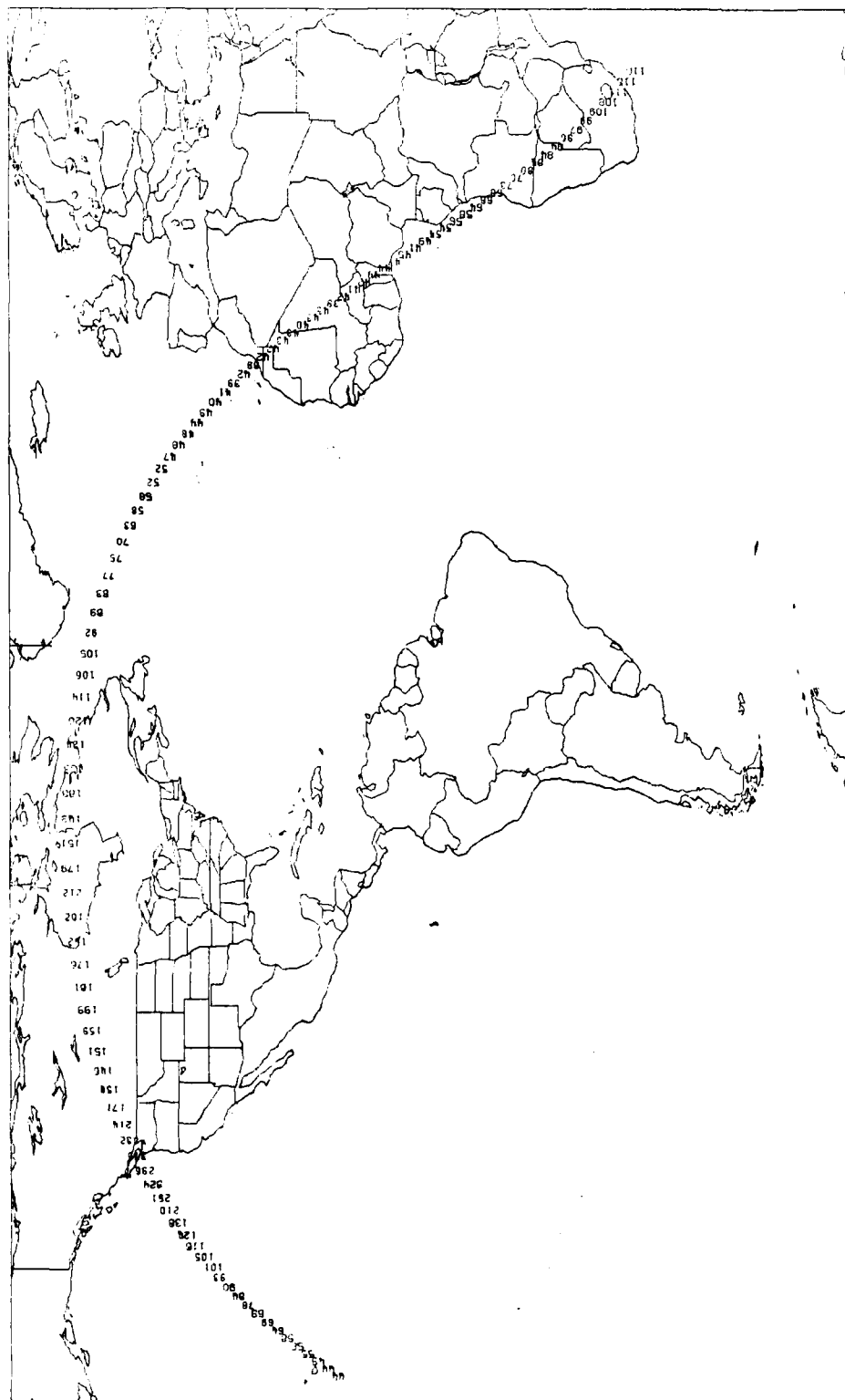


Figure 26

OPERATION NO. 2



STS41-G

Figure 27

STATION
IRM III RUN# 4

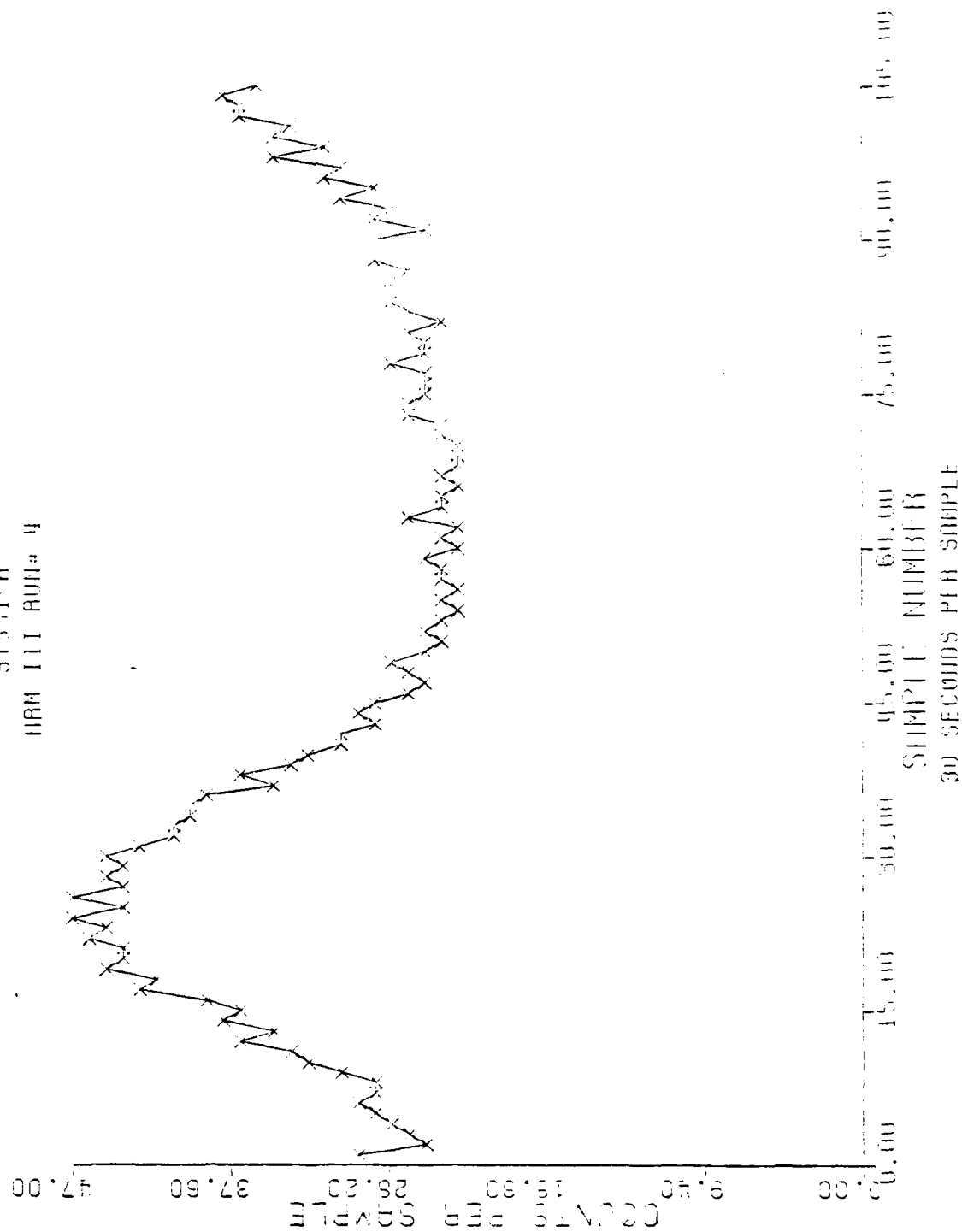
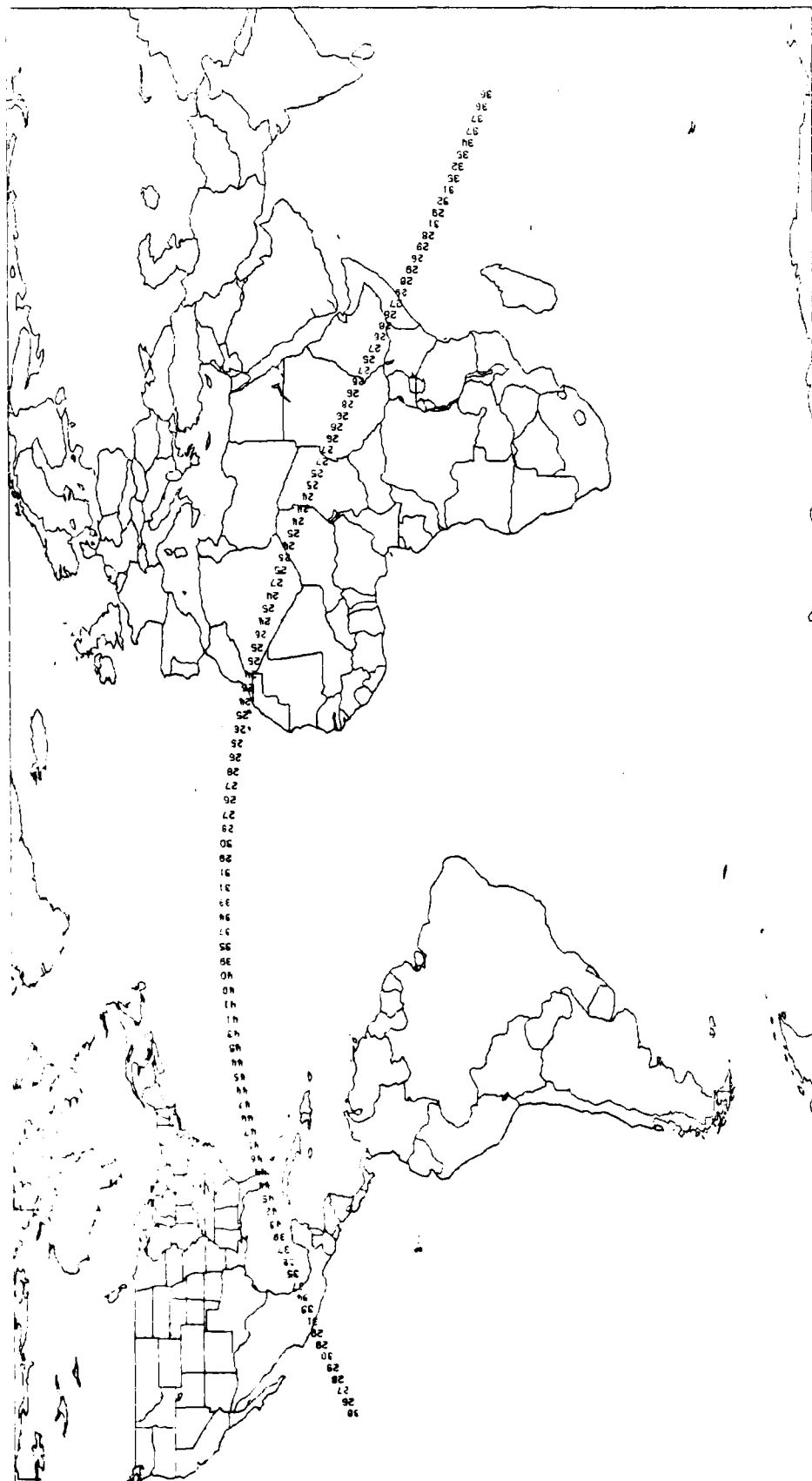


Figure 41

HRM-111

OPERATION NO. 4



ST5-51A

Figure 40

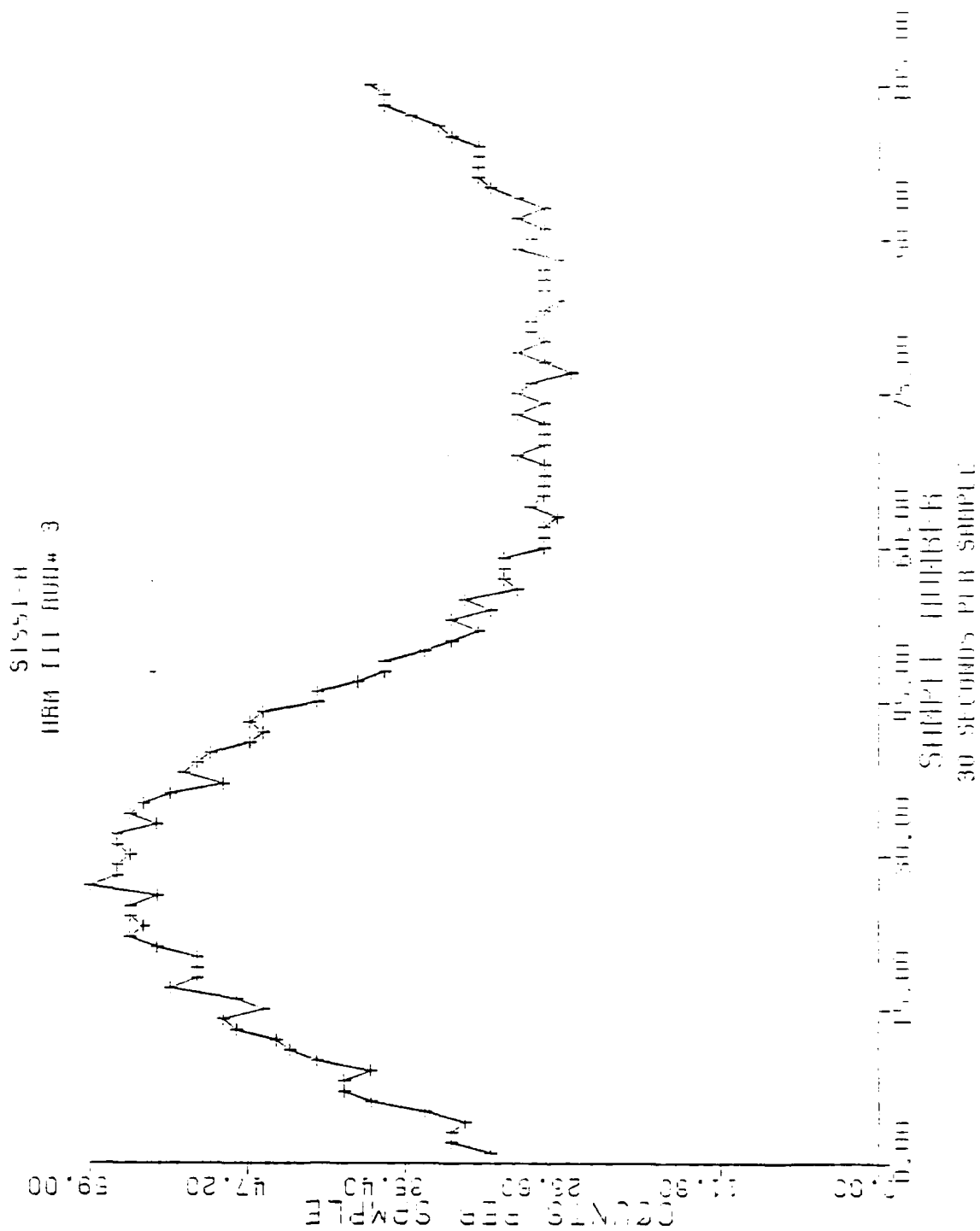
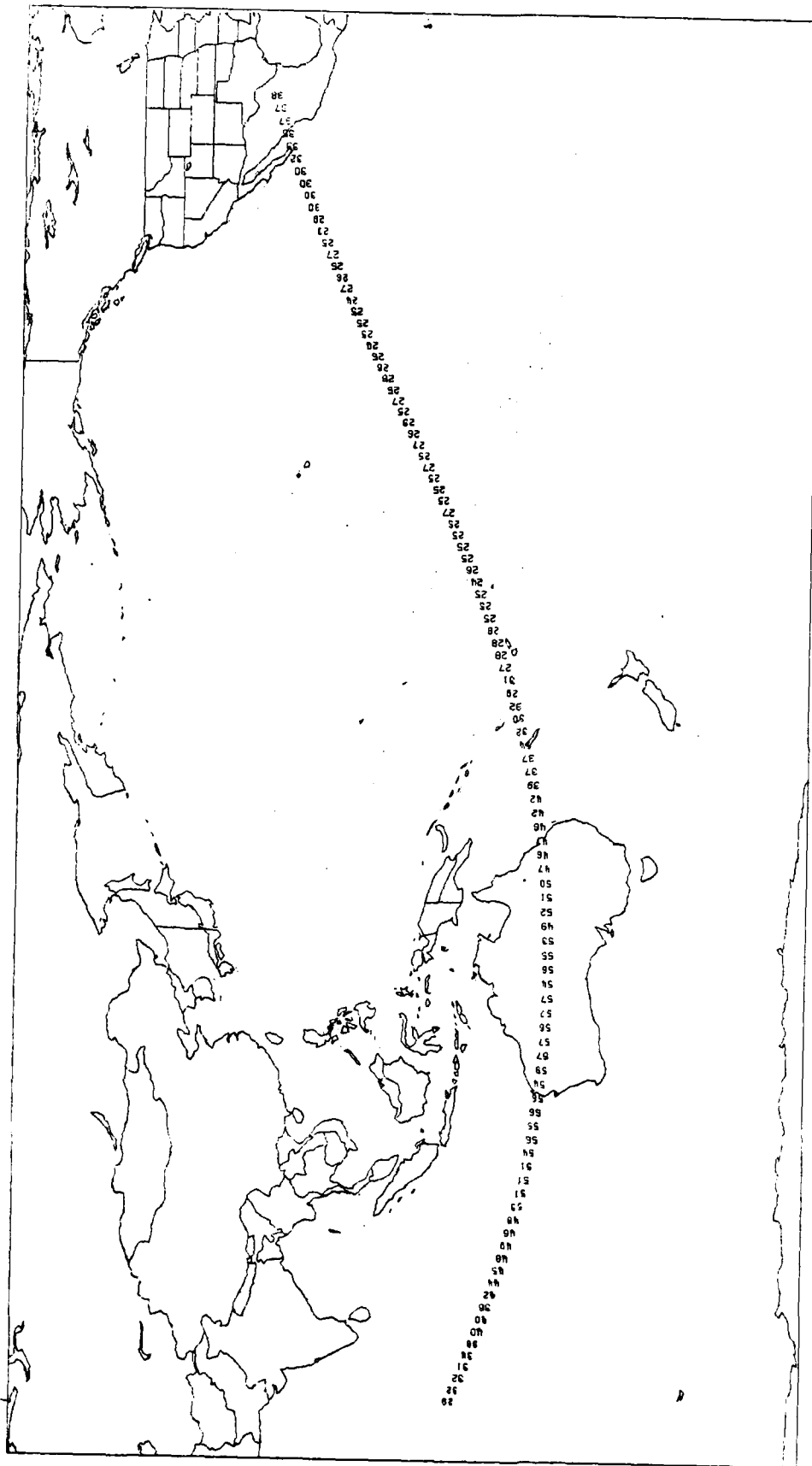


Figure 39

HRM-III

OPERATION NO. 3



STS-51A

Figure 38

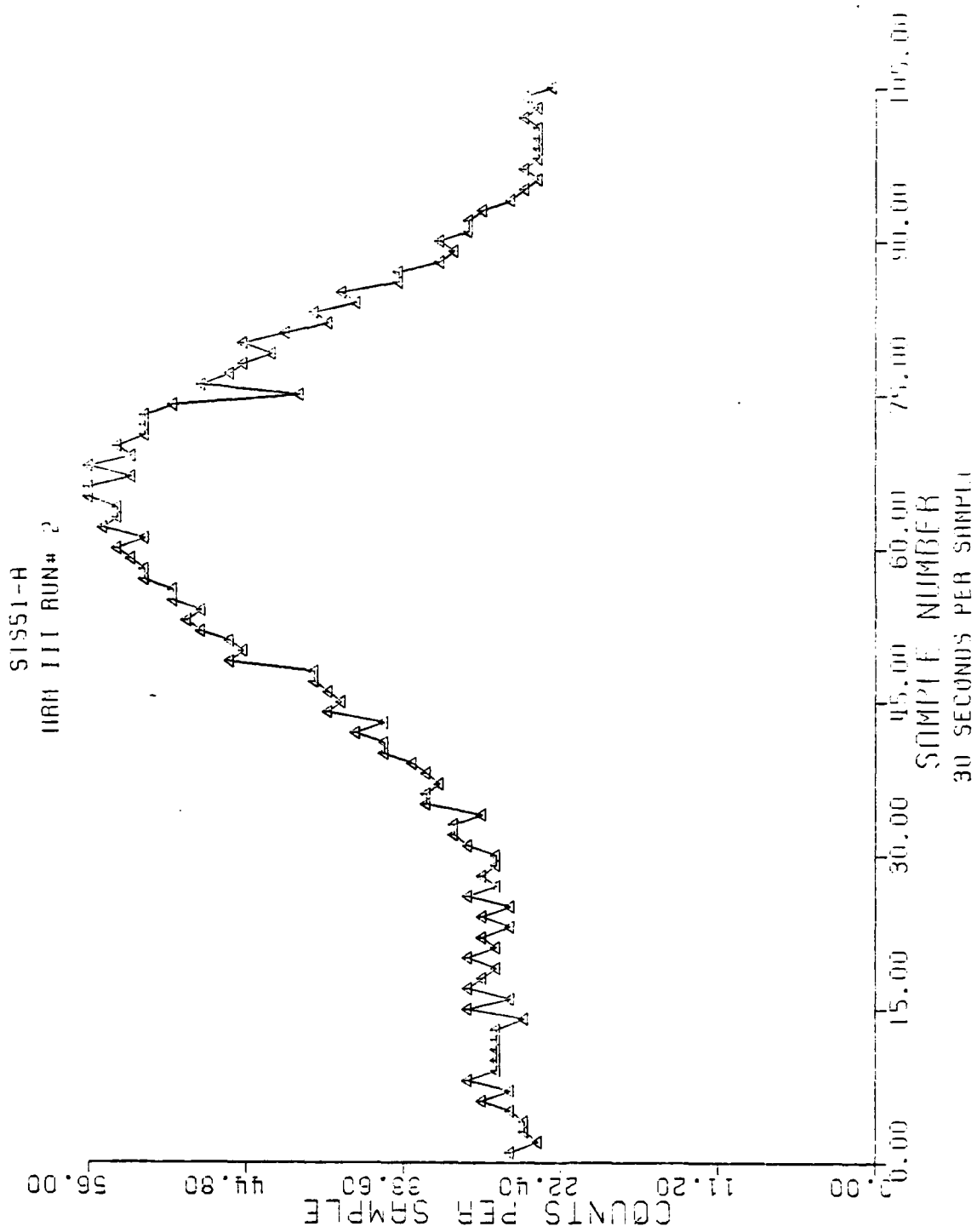
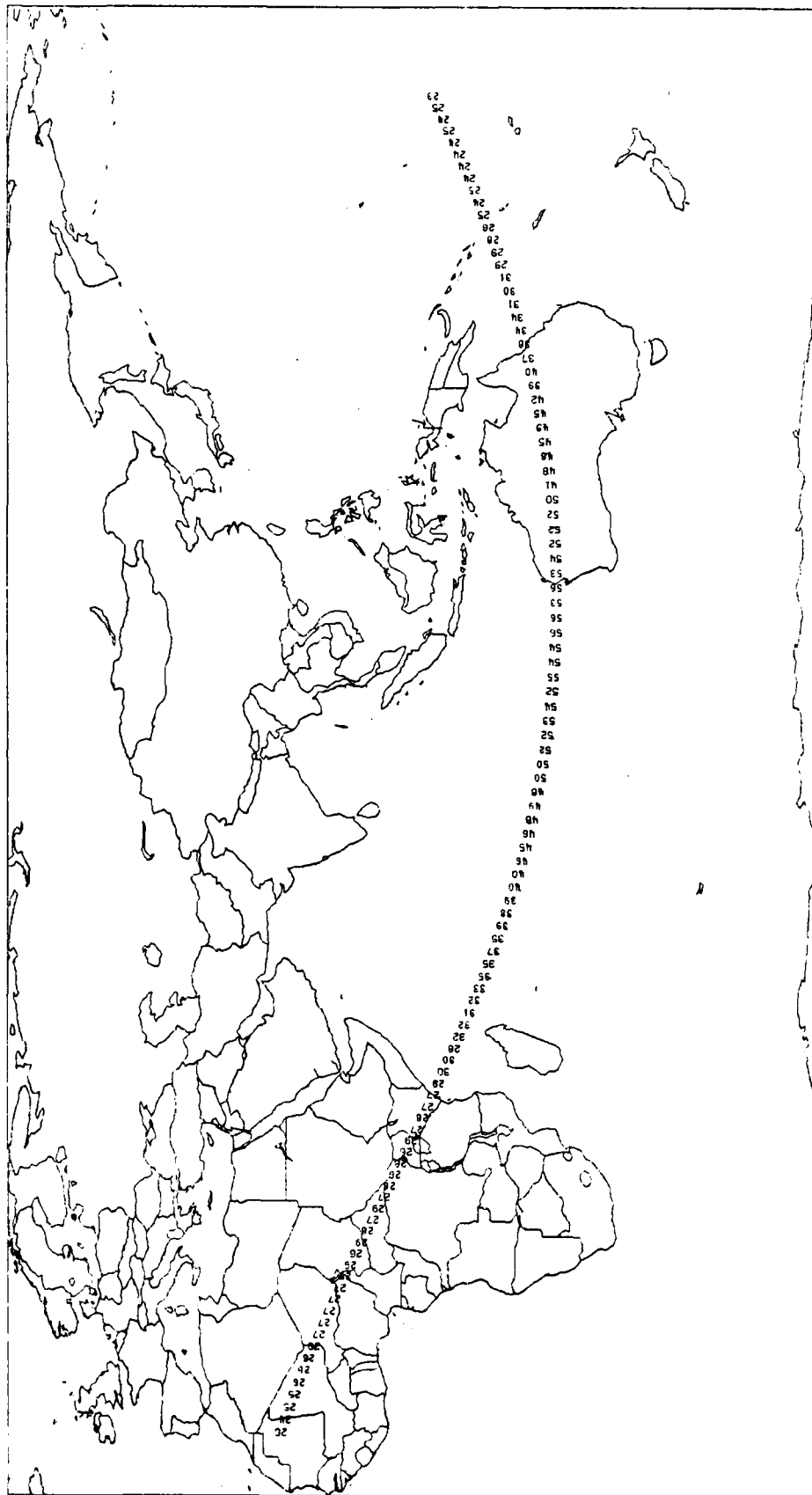


Figure 37

HAM-III

OPERATION NO. 2



ST5-51A

Figure 36

ST551-H
URN III RUN# 1

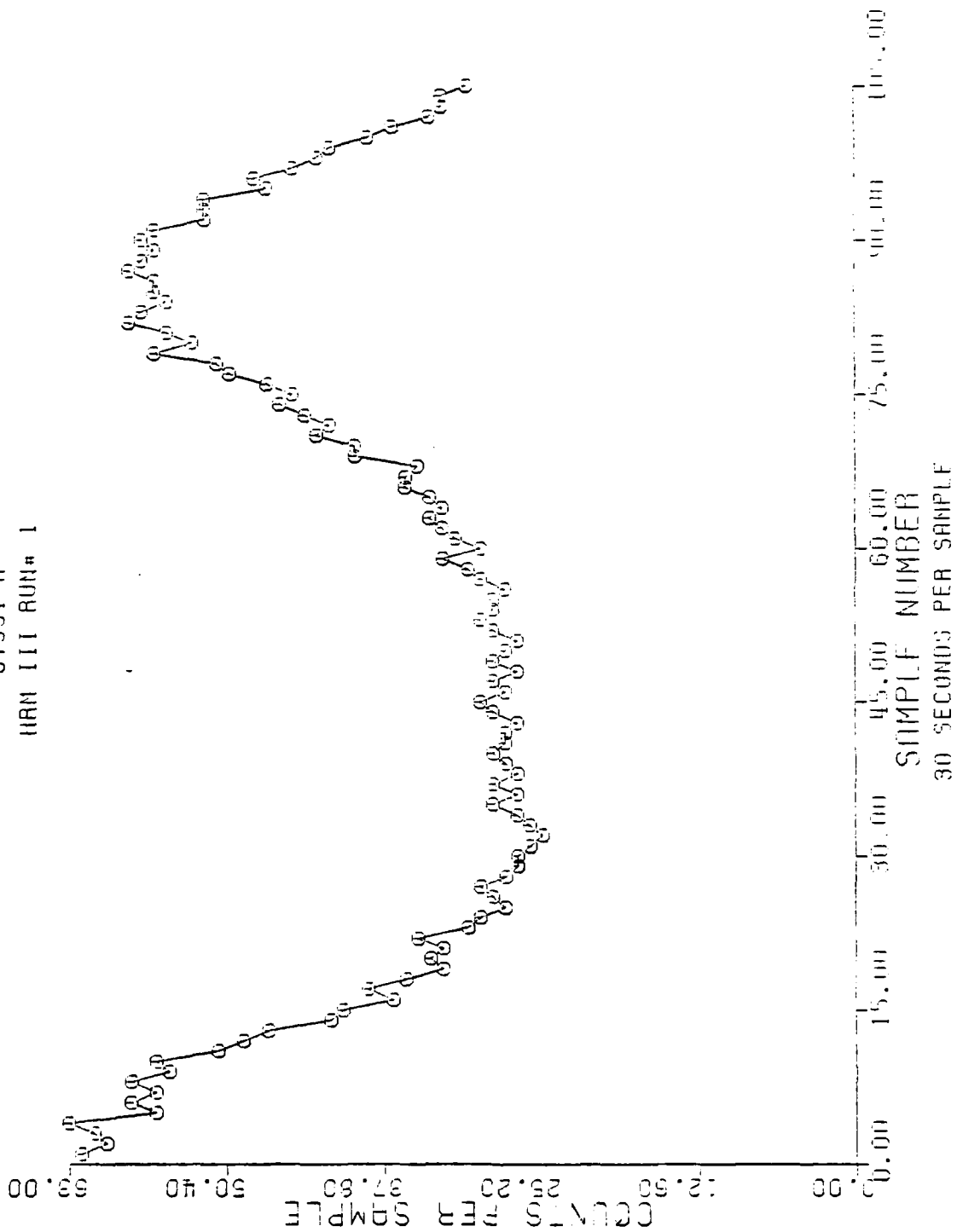
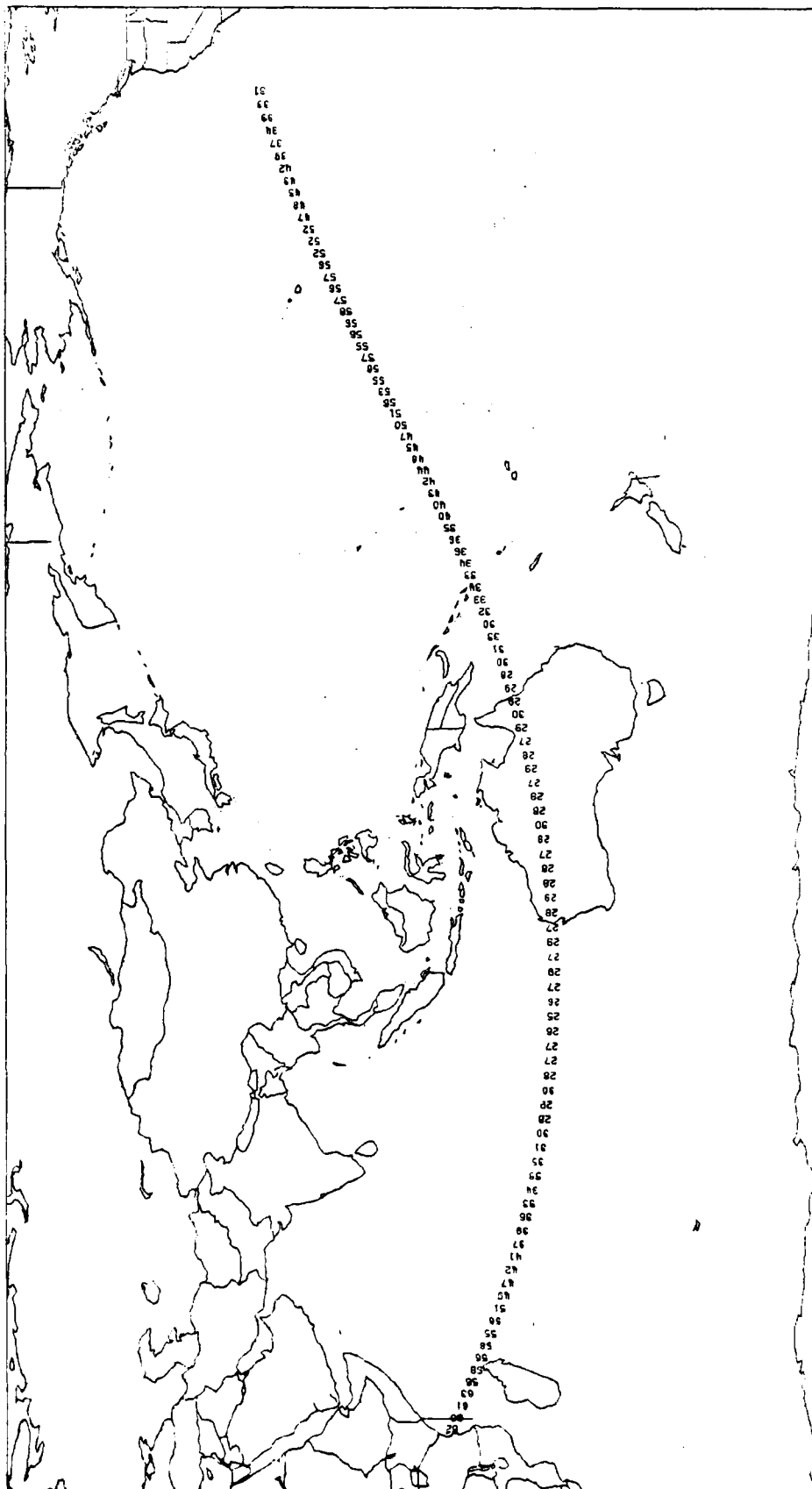


Figure 35

HRM-III

OPERATION NO. 1



STC-51A

Figure 34

① = RUN # 1
 Δ = RUN # 2
 + = RUN # 3
 X = RUN # 4

STS41-G
COMPOSITE

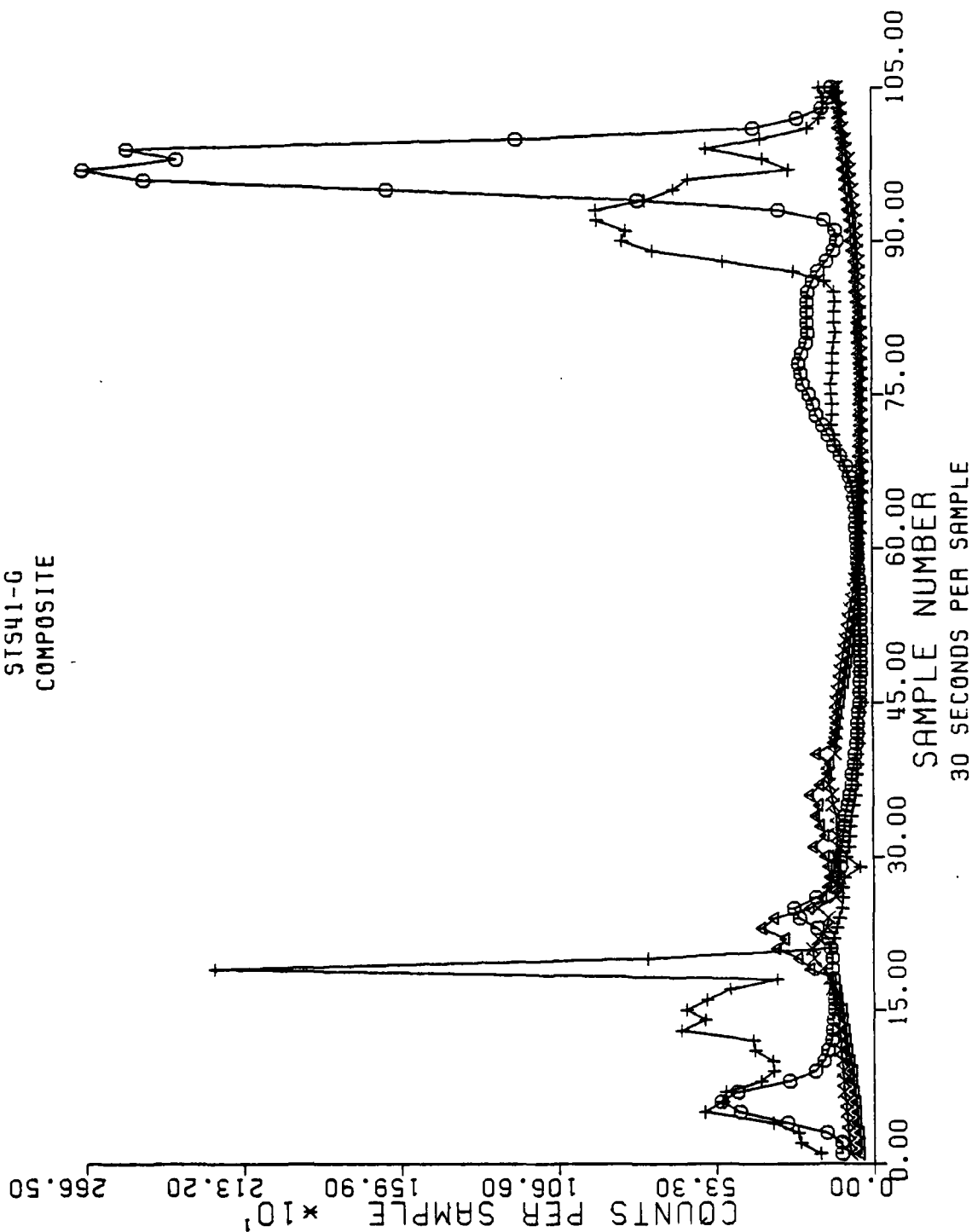


Figure 33

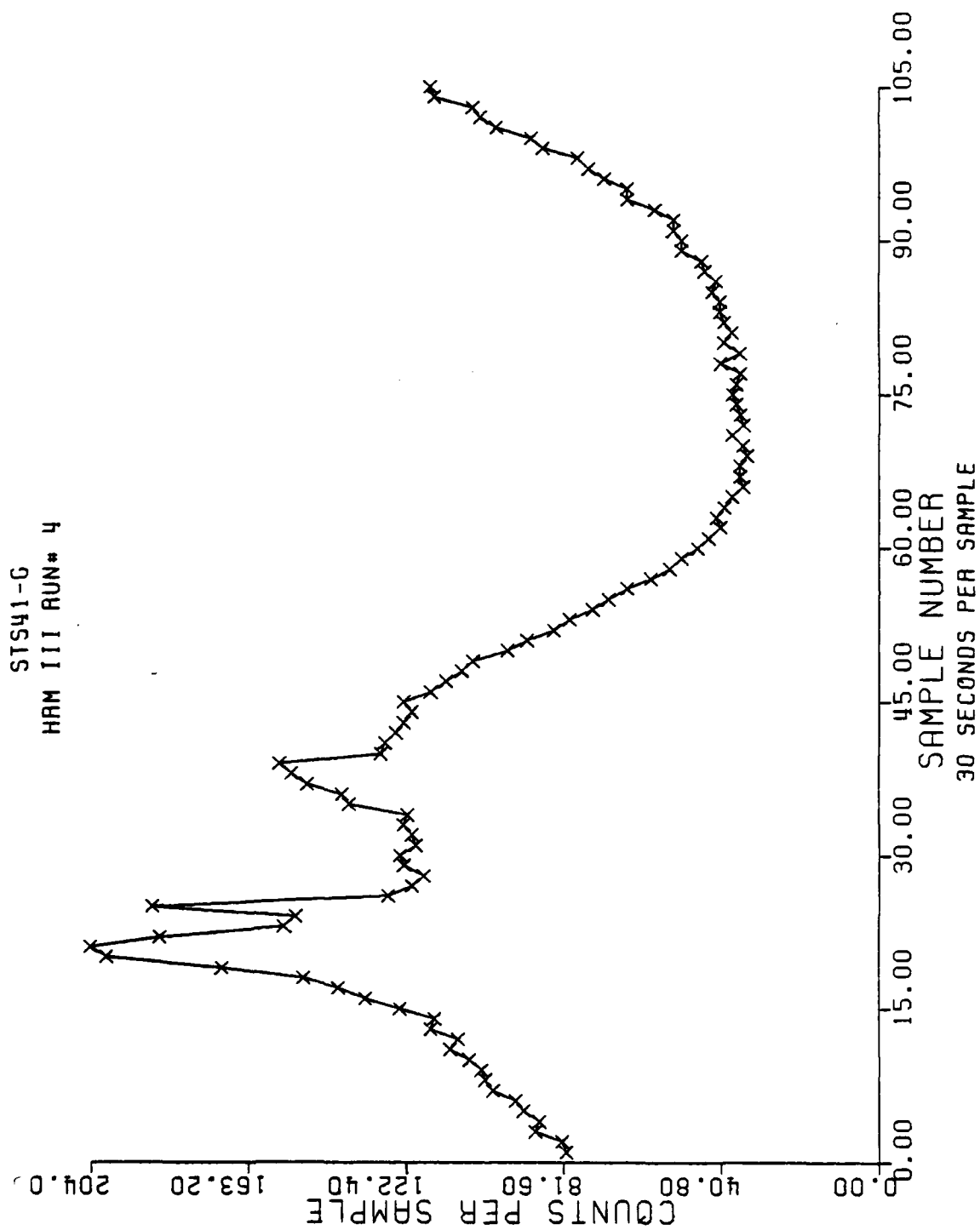
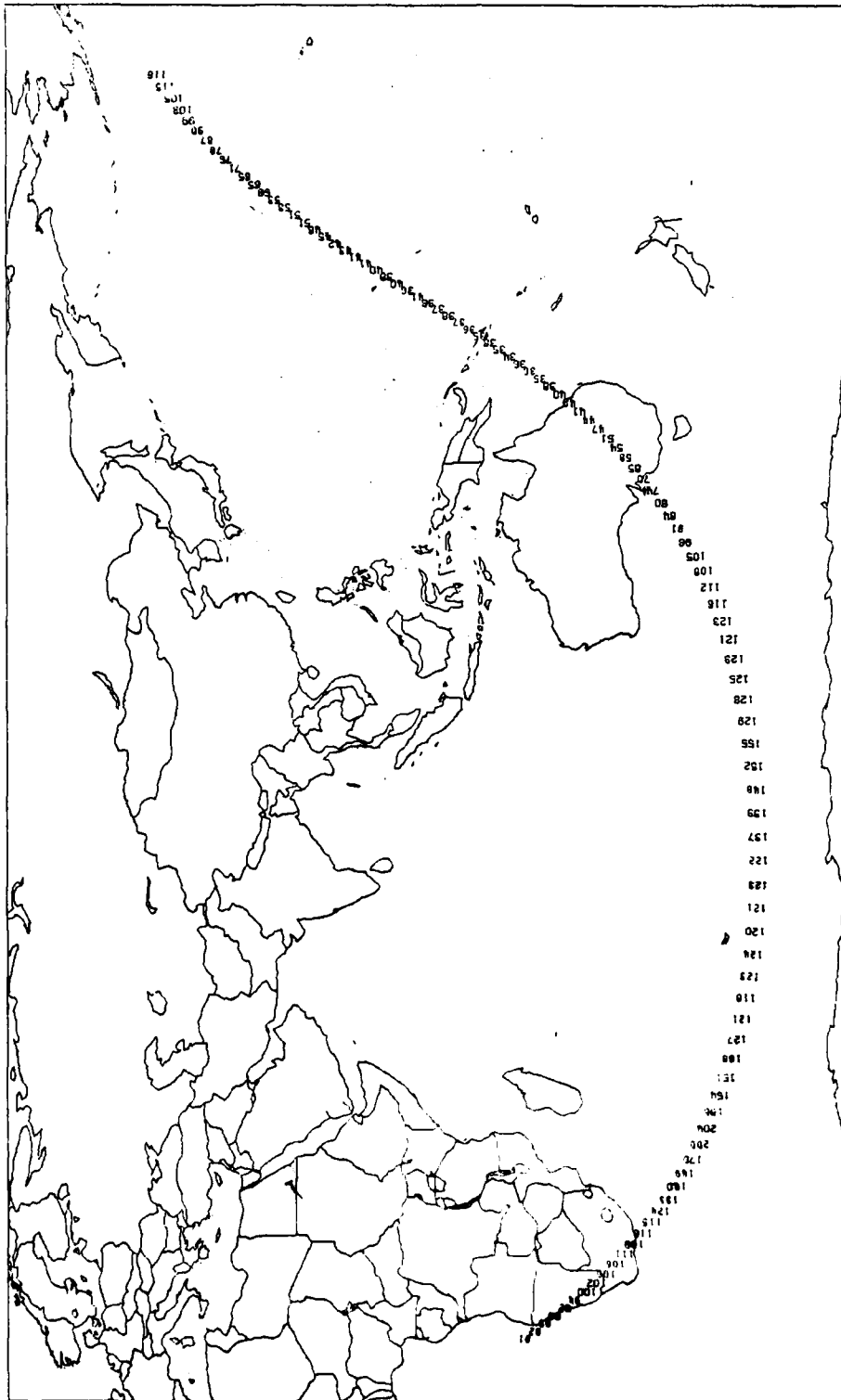


Figure 32

HRM-111

OPERATION NO. 4



STS41-C

Figure 31

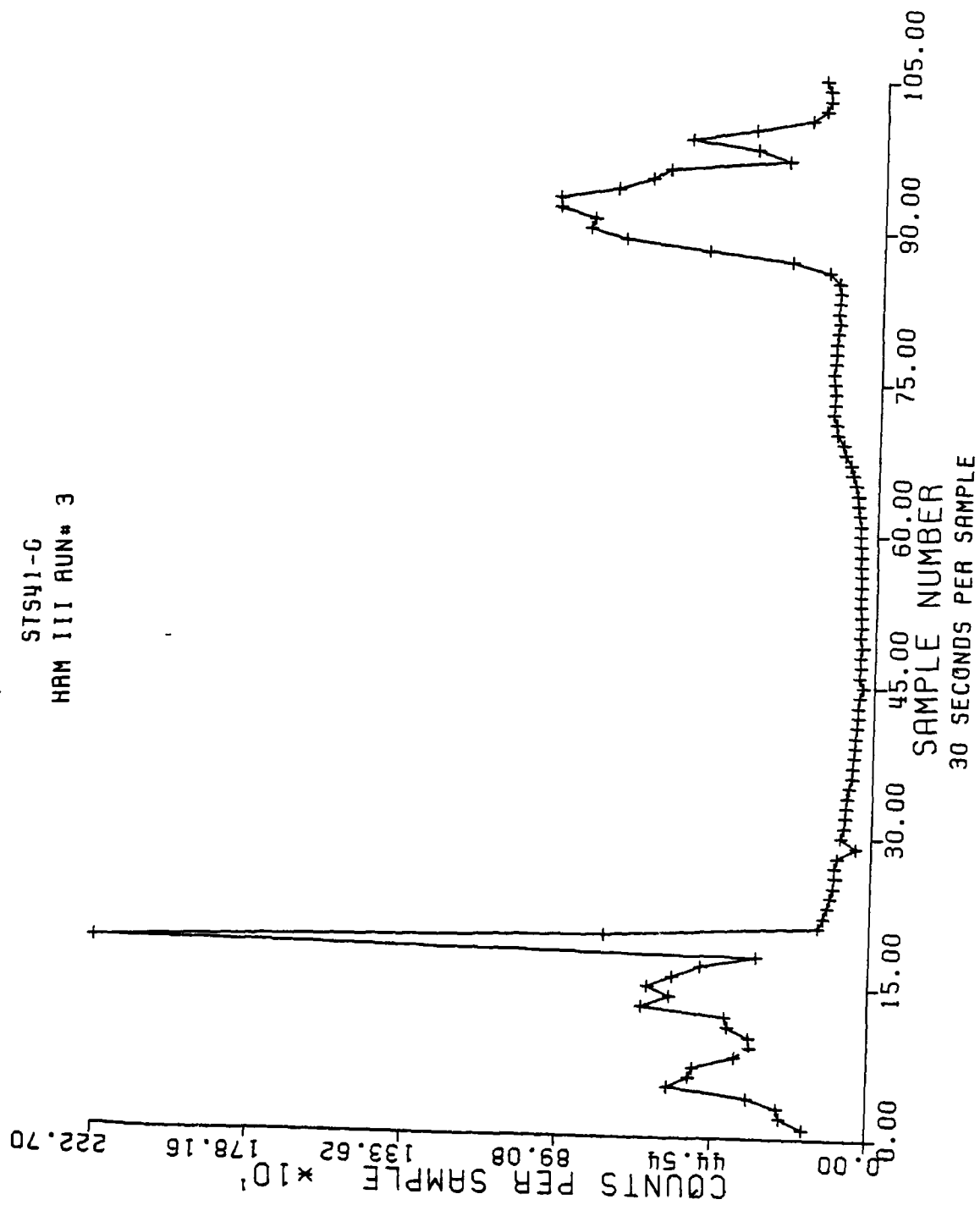
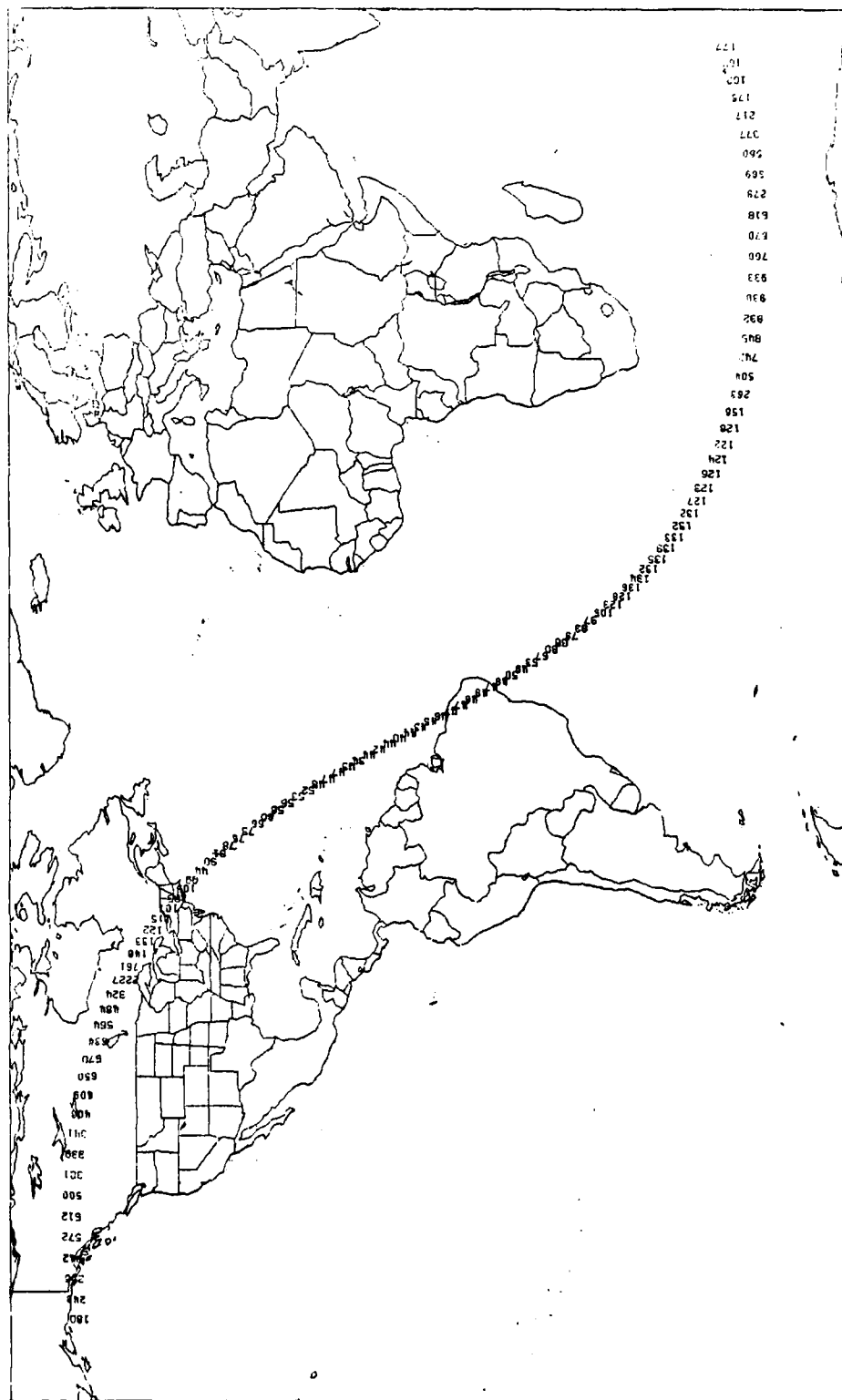


Figure 30

HAN-III

OPERATION NO. 3



ST541-G

Figure 29

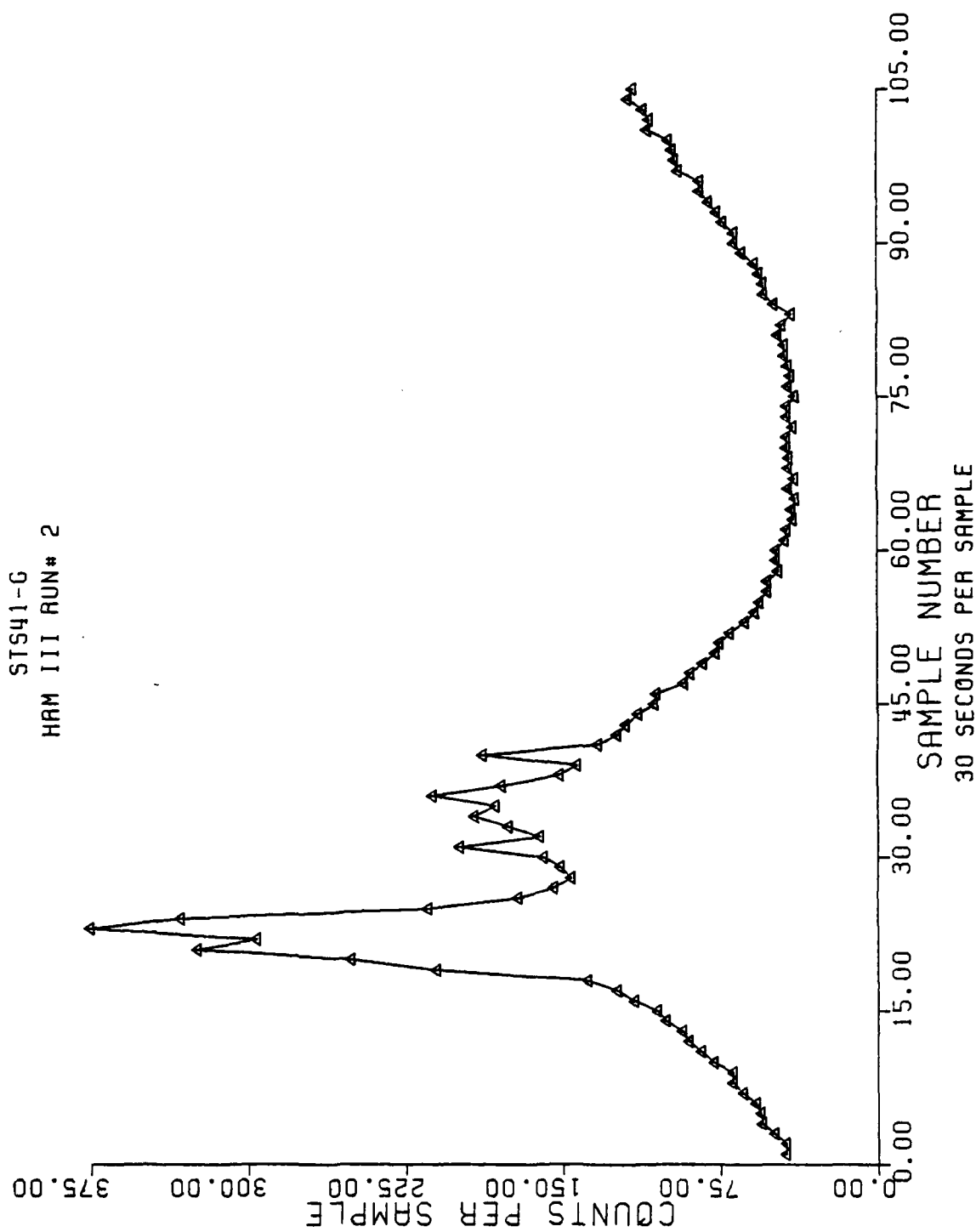


Figure 28

O = BURST 1
 Δ = BURST 2
 + = BURST 3
 X = BURST 4

S1551-A
 COMPOSITE

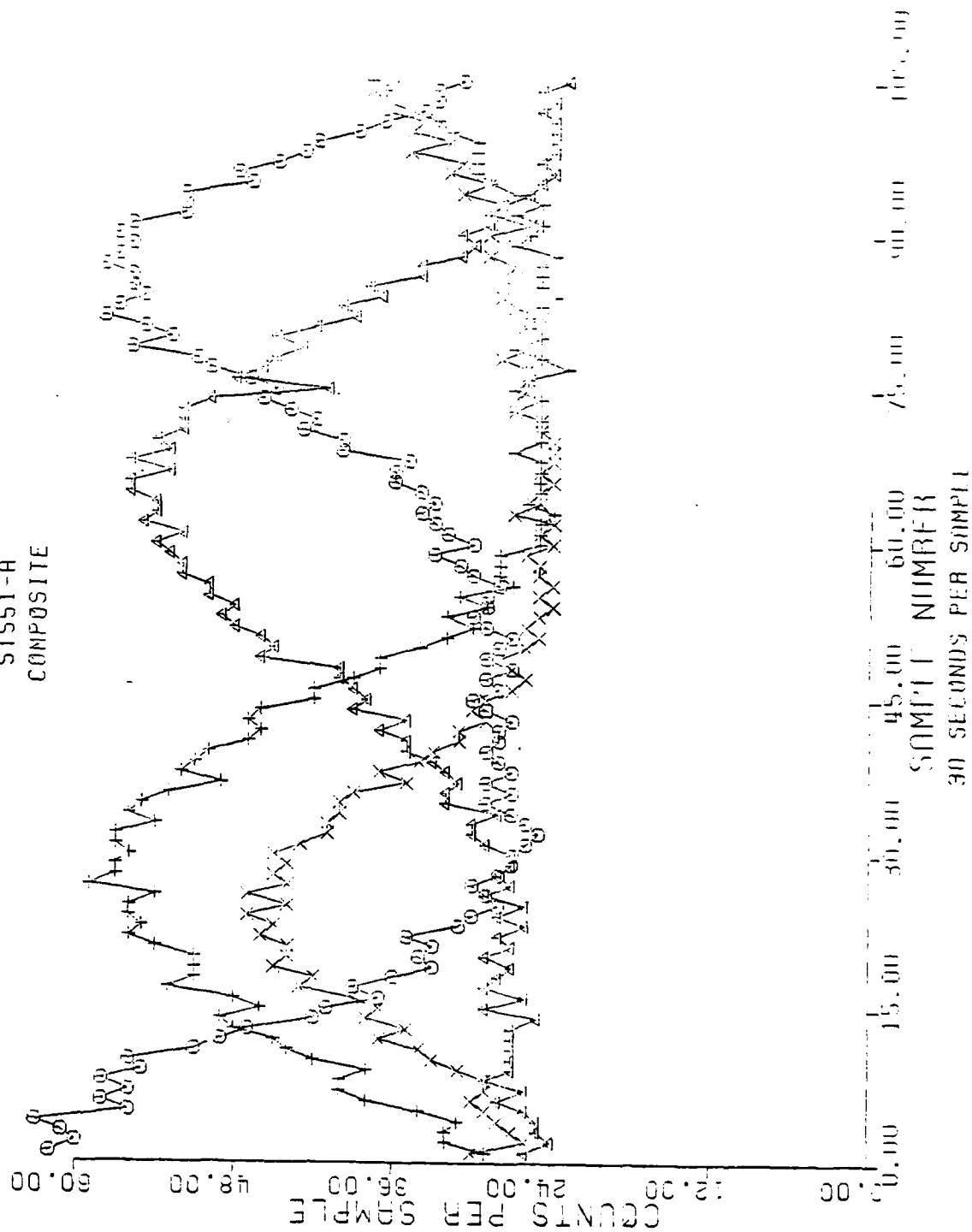


Figure 42

TABLE 1

PRM DATA FROM STS-41C

RAW DATA

MET	0/06:08:58	5/16:15:XX
Counts	5304	1658
Average Count Rate	372.21/hr	146.34/hr
Stdr Dev	<u>+19.29/hr</u>	<u>+12.10/hr</u>
rem	17.7 mrem	6.41 mrem
rad	1.46 mrad	.508 mrad
Hours	14.25 hrs	11.33 hrs

TABLE 2

PRM DATA FROM STS-41C

AVERAGE DOSE RATES

MET	07/06:08:58	5/16:15:XX
Dose Rate (mrem/hr)	1.2421	.5658
Dose Rate (mrad/hr)	.1025	.0448

Average dose rate for both operations:

(mrem/hr) .904

(mrad/hr) .074

Mission Duration: 6 days 23 hours 40 minutes.

Estimated Total Mission Dosage: 151.571 mrem

12.407 mrad

TABLE 3

PRM DATA FROM STS-41D

RAW DATA

MET	03/23:41:00	04/19:15:00	05/17:36:XX
Counts	2217	2110	2489
Average Count Rate	278.87/hr	225.67/hr	192.80/hr
Std Dev	16.70/hr	15.02/hr	13.89/hr
rem	2.26 mrem	2.35 mrem	2.80 mrem
rad	.234 mrad	.233 mrad	.276 mrad
Hours	7.95	9.35	12.91

TABLE 4

PRM DATA FROM STS-41D

AVERAGE DOSE RATES

MET	03/23:41:00	04/19:15:00	05/17:36:XX
Dose Rate (mrem/hr)	.284	.251	.217
Dose Rate (mrad/hr)	.029	.025	.021

Average dose rate for both operations:

(mrem/hr) .234

(mrad/hr) .023

Mission Duration: 6 days 56 minutes.

Estimated Total Mission Dosage: 33.914 mrem

3.333 mrad

TABLE 5

PRM DATA FROM STS-41G

RAW DATA

MET	1/09:48:00	6/10:01:00
Counts	3869	3166
Average Count Rate	219.21/hr	204.79/hr
Stdr Dev	14.81/hr	14.31/hr
rem	10.4 mrem	8.33 mrem
rad	.970 mrad	.790 mrad
Hours	17.65 hrs	15.46 hrs

TABLE 6

PRM DATA FROM STS-41G

AVERAGE DOSE RATES

MET	1/09:48:00	6/10:01:00
Dose Rate (mrem/hr)	.589	.539
Dose Rate (mrad/hr)	.055	.051

Average dose rate for both operations:

(mrem/hr) .564

(mrad/hr) .053

Mission Duration: 8 days 5 hours 23 minutes.

Estimated Total Mission Dosage: 111.324 mrem

10.461 mrad

TABLE 7

PRM DATA FROM STS-51A

RAW DATA

MET	0/23:16:00	2/08:04:43
Counts	2874	3367
Average Count Rate	203.40/hr	249.96/hr
Stdr Dev	14.26/hr	15.81/hr
rem	2.98 mrem	3.47 mrem
rad	.307 mrad	.368 mrad
Hours	14.13 hrs	13.47 hrs

TABLE 8

PRM DATA FROM STS-51A

AVERAGE DOSE RATES

MET	0723:16:00	2708:04:43
Dose Rate (mrem/hr)	.211	.258
Dose Rate (mrad/hr)	.0217	.0273

Average dose rate for both operations:

(mrem/hr) .2345

(mrad/hr) .0245

Mission Duration: 7 days 23 hours 45 minutes.

Estimated Total Mission Dosage: 44.9654 mrem

4.6979 mrad

dosage was greatest on STS-41C at 151.571 mrem (12.407 mrad) (see table 2).

The operation which yielded the highest dose rate was the STS-41C data take at a mission elapsed time (MET) of 0/06:08:58. The PRM data from this operation is surprisingly high and cannot be correlated to HRM-III (gamma-ray) data from approximately the same time frame.

SECTION IV

CONCLUSIONS

For the most part, RME data from the STS-41C, 41D, 41G, and 51A flights are consistent with data taken on previous missions. The higher gamma-ray count rates (HRM-III) from STS-41G are attributed to the higher orbital inclination of that flight. The unusually high neutron/proton data (PRM) from the first STS-41C operation remains unexplained. All other variations in the data correspond to natural external sources of radiation (e.g. the South Atlantic Anomaly, and the Southeast Asian Anomaly).

The RME equipment performed very well with only one anomaly experienced in 28 total operations. This failure of the PRM was due to a low battery, and after a battery change, two successful operations were accomplished.

Future flights of the RME will contribute to the data base of background radiation. Different mission profiles will yield data from different altitudes and orbital inclinations. Such a data base will prove useful for planning future space systems, including crew health and safety requirements, as may exist in permanently inhabited stations and platforms.

REFERENCES

1. STS-6 Report, (In publishing), AFTAC, Caplan, et al.
2. Results From Radiation Monitoring Equipment Experiment on STS-8, AFTAC-TR-84-4, 9 July 1984, Madonna, et al.
3. Results From Radiation Monitoring Equipment Experiment on STS-11, AFTAC-TR-85-2, 14 March 1985, Madonna, et al.
4. HRM-III Handheld Radiation Monitor User's Handbook, EG&G Report No. EG&GH83-2424 S-347-MN.
5. Pocket Neutron REM Meter, W. Quam, T. DeDuca, et al., preprint.

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APPENDIX A
RAW DATA FROM STS-41C

$\bar{X} = 0266.0$
 $\bar{Y} = 2329.1$
 $\bar{Z} = -6267.13$

STUDENT EXP/RME/GAS

RME STUDENT
FIX

NRN DATA PADS EXTRA 14011

INIT ME:05:04:40:00

CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0--1	25	0--22	25	0--43	30	0--64	34	0--85	34
0--2	23	0--23	26	0--44	29	0--65	32	0--86	34
0--3	24	0--24	27	0--45	32	0--66	36	0--87	33
0--4	22	0--25	28	0--46	31	0--67	36	0--88	31
0--5	26	0--26	26	0--47	31	0--68	33	0--89	31
0--6	27	0--27	27	0--48	33	0--69	34	0--90	34
0--7	26	0--28	25	0--49	34	0--70	34	0--91	33
0--8	27	0--29	27	0--50	32	0--71	35	0--92	30
0--9	25	0--30	27	0--51	32	0--72	34	0--93	36
0--10	26	0--31	28	0--52	32	0--73	32	0--94	34
0--11	26	0--32	29	0--53	33	0--74	34	0--95	33
0--12	26	0--33	30	0--54	34	0--75	34	0--96	33
0--13	25	0--34	28	0--55	32	0--76	33	0--97	31
0--14	27	0--35	28	0--56	33	0--77	33	0--98	35
0--15	27	0--36	29	0--57	36	0--78	34	0--99	34
0--16	25	0--37	29	0--58	35	0--79	33	0--00	30
0--17	26	0--38	27	0--59	36	0--80	35	0--01	34
0--18	24	0--39	21	0--60	35	0--81	35	0--02	34
0--19	27	0--40	30	0--61	35	0--82	32	0--03	32
0--20	26	0--41	30	0--62	34	0--83	32	0--04	31
0--21	27	0--42	31	0--63	35	0--84	30	0--05	33

12-6

41-D/BAS

1817 NET 3/23 14.6 NORM DATA PADS

CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0-1	50	0-22	42	0-43	30	0-64	28	0-85	47				
0-2	52	0-23	41	0-44	30	0-65	29	0-86	48				
0-3	51	0-24	40	0-45	29	0-66	30	0-87	49				
0-4	52	0-25	38	0-46	30	0-67	29	0-88	50				
0-5	64	0-26	37	0-47	29	0-68	31	0-89	53				
0-6	63	0-27	39	0-48	32	0-69	32	0-90	52				
0-7	60	0-28	29	0-49	31	0-70	31	0-91	52				
0-8	59	0-29	37	0-50	31	0-71	34	0-92	54				
0-9	59	0-30	35	0-51	31	0-72	34	0-93	55				
0-10	59	0-31	32	0-52	31	0-73	35	0-94	53				
0-11	59	0-32	32	0-53	30	0-74	34	0-95	57				
0-12	58	0-33	32	0-54	30	0-75	36	0-96	50				
0-13	55	0-34	32	0-55	32	0-76	29	0-97	55				
0-14	52	0-35	31	0-56	30	0-77	42	0-98	56				
0-15	54	0-36	31	0-57	29	0-78	37	0-99	59				
0-16	53	0-37	29	0-58	30	0-79	37	0-100	58				
0-17	52	0-38	30	0-59	29	0-80	40	0-101	56				
0-18	50	0-39	30	0-60	32	0-81	43	0-102	56				
0-19	49	0-40	30	0-61	27	0-82	43	0-103	54				
0-20	44	0-41	29	0-62	30	0-83	44	0-104	56				
0-21	43	0-42	35	0-63	26	0-84	45	0-105	55				

12-8

41-C/FIN

04711028154.1 gms
03/21471041

X = 14196.85
Y = 10105.25
Z = 1092319
X = -8466
Y = -3396.0
Z = -1085.4

CHN	COUNTS/SEC	CHN	COUNTS/SEC	CHN	COUNTS/SEC	CHN	COUNTS/SEC	CHN	COUNTS/SEC
1	7	0_22	42	1_43	51	0_64	46	0_85	30
2	7	0_23	40	0_44	58	0_65	46	0_86	28
3	28	0_24	42	0_45	59	0_66	46	0_87	27
4	31	0_25	43	0_46	56	0_67	42	0_88	27
5	30	0_26	41	0_47	59	0_68	44	0_89	28
6	29	0_27	43	0_48	57	0_69	42	0_90	29
7	31	0_28	43	0_49	59	0_70	41	0_91	29
8	30	0_29	46	0_50	60	0_71	39	0_92	29
9	31	0_30	47	0_51	57	0_72	40	0_93	29
10	24	0_31	45	0_52	59	0_73	38	0_94	29
11	37	0_32	49	0_53	56	0_74	39	0_95	28
12	47	0_33	49	0_54	54	0_75	35	0_96	29
13	52	0_34	52	0_55	57	0_76	36	0_97	27
14	61	0_35	53	0_56	55	0_77	34	0_98	27
15	63	0_36	54	0_57	54	0_78	34	0_99	27
16	61	0_37	55	0_58	53	0_79	33	0100	28
17	58	0_38	55	0_59	50	0_80	33	0101	27
18	53	0_39	55	0_60	51	0_81	30	0102	27
19	50	0_40	60	0_61	48	0_82	31	0103	28
20	48	0_41	57	0_62	48	0_83	30	0104	28
21	44	0_42	59	0_63	48	0_84	29	0105	27

345776 01/31/87

2/03/19 41

1 = 8359026 X = -3243.7

Y = 17423905 Y = 9966.10

Z = 10068538 Z = 2001.74

246/08:21:25gmt

02/1935:31

X = -427.413 X = 4537.3

Y = 18820782 Y = -6275.9

Z = 10350892 Z = 1293.80

SEP 21 19:38

NRW DATA PADS

CHN	COUNTS/SEC	CHN	COUNTS/SEC	CHN	COUNTS/SEC	CHN	COUNTS/SEC	CHN	COUNTS/SEC
0_1	30	0_22	56	0_43	36	0_64	30	0_85	31
0_2	31	0_23	55	0_44	32	0_65	30	0_86	32
0_3	35	0_24	51	0_45	31	0_66	31	0_87	30
0_4	38	0_25	53	0_46	30	0_67	29	0_88	32
0_5	38	0_26	50	0_47	30	0_68	30	0_89	31
0_6	40	0_27	51	0_48	31	0_69	30	0_90	35
0_7	43	0_28	49	0_49	29	0_70	31	0_91	32
0_8	46	0_29	49	0_50	21	0_71	30	0_92	32
0_9	44	0_30	47	0_51	31	0_72	31	0_93	34
0_10	47	0_31	45	0_52	29	0_73	30	0_94	35
0_11	45	0_32	43	0_53	31	0_74	31	0_95	36
0_12	48	0_33	43	0_54	29	0_75	29	0_96	36
0_13	51	0_34	41	0_55	29	0_76	29	0_97	36
0_14	53	0_35	38	0_56	29	0_77	30	0_98	39
0_15	52	0_36	39	0_57	30	0_78	29	0_99	37
0_16	54	0_37	38	0_58	29	0_79	29	0100	42
0_17	54	0_38	37	0_59	29	0_80	27	0101	43
0_18	54	0_39	36	0_60	30	0_81	30	0102	45
0_19	54	0_40	34	70_1	29	0_82	30	0103	45
0_20	52	0_41	33	70_2	31	0_83	30	0104	47
0_21	50		33		29	0_84	30	0105	49

annels

~~10-13-69~~

10-13-69

4198295

x - 2510.6

y = -9042.7

- 1069.4

1648510/10
241440/391

01/02/03:45

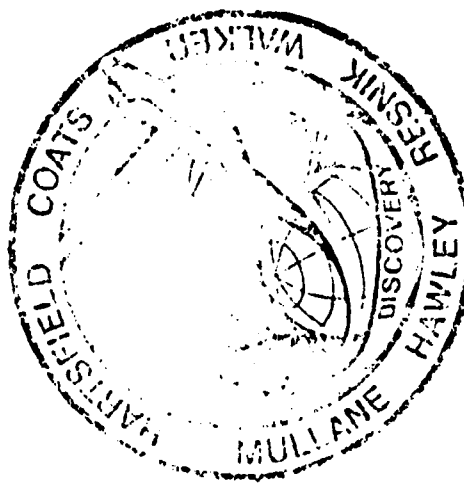
[illegible]

GAS

41-D/FIN

12-5

41-D/FIN



PAYLOAD

OPS C/L

STS

41-D

APPENDIX B
RAW DATA FROM STS-41D

PRM

STUDENT
EXP

1 Activation & Checkout

Unstow PRM

If second operation, replace, mark and stow used battery

Set Rotary sw - HRS

ON/OFF sw - ON

✓ Display counts down from 9999 and record MET on PRM DATA PAD when Display = 0.00

- * If display shows a colon or is *
- * blank, set ON/OFF sw - OFF; *
- * replace, mark, and stow used *
- * battery and repeat step 1 *

Report MET to MCC

Restow PRM (leave ON)

2 Data Recording

8-18 hrs after step 1, unstow PRM

Set rotary switch to appropriate positions and record display outputs on PRM DATA PAD

Set ON/OFF sw - OFF

Stow PRM

PRM DATA PAD

0.00 MET <u>01 06:08:58</u>		<u>1</u> : <u> </u> : <u> </u>
HRS	<u>14.25</u>	<u> </u> . <u> </u>
CNTS	<u>5.304</u> E (<u>±</u>) <u>03</u>	<u> </u> . <u> </u> E (<u> </u>) <u> </u>
RAD	<u>1.46</u> E (<u>-</u>) <u>03</u>	<u> </u> . <u> </u> E (<u> </u>) <u> </u>
REM	<u>1.77</u> E (<u>-</u>) <u>02</u>	<u> </u> . <u> </u> E (<u> </u>) <u> </u>

m3



PAYLOAD
OPS C/L

STS
41-C

RME REF DATA OPS SMM REF A SMM RETURN SMM OPS FSS ACT

PRM

STUDENT
EXP

1 Activation & Checkout

Unstow PRM

If second operation, replace, mark and stow used battery

Set Rotary sw - HRS

ON/OFF sw - ON

✓ Display counts down from 9999 and record MET on PRM DATA PAD when Display = 0.00

- * If display shows a colon or is *
- * blank, set ON/OFF sw - OFF; *
- * replace, mark, and stow used *
- * battery and repeat step 1 *

Report MET to MCC

Restow PRM (leave ON)

2 Data Recording

8-18 hrs after step 1, unstow PRM

Set rotary switch to appropriate positions and record display outputs on PRM DATA PAD

Set ON/OFF sw - OFF

Stow PRM

PRM DATA PAD

0.00 MET <u>3104:50:--</u>		<u>5/16:15--</u>	
<u>3117:27:--</u>			
HRS	<u>- 11.05</u>	<u>11.33</u>	
CNTS	<u>FAH E (-) --</u>	<u>1.658 E (+) 3</u>	
RAD	<u>--- E (-) --</u>	<u>5.08 E (-) 4</u>	
REM	<u>--- E (-) --</u>	<u>6.41 E (-) 3</u>	

13.1.11 6/03:30

8-11

41-C/FIN 1

RME V C3GO REF DATA OPS V DATA V RETURN V CFS V AC

UNIT	REF	DATA	OPS	DATA	RETURN	CFS	AC
0-1	41	0-22	27	0-43	30	0-64	47
0-2	30	0-23	26	0-44	30	0-65	48
0-3	28	0-24	26	0-45	28	0-66	47
0-4	28	0-25	27	0-46	32	0-67	49
0-5	26	0-26	24	0-47	31	0-68	51
0-6	29	0-27	28	0-48	33	0-69	51
0-7	27	0-28	29	0-49	33	0-70	51
0-8	27	0-29	27	0-50	34	0-71	50
0-9	27	0-30	27	0-51	36	0-72	51
0-10	30	0-31	27	0-52	36	0-73	50
0-11	25	0-32	26	0-53	37	0-74	48
0-12	23	0-33	28	0-54	38	0-75	49
0-13	23	0-34	28	0-55	46	0-76	51
0-14	24	0-35	27	0-56	39	0-77	46
0-15	25	0-36	28	0-57	40	0-78	46
0-16	25	0-37	26	0-58	43	0-79	47
0-17	25	0-38	26	0-59	45	0-80	45
0-18	27	0-39	28	0-60	43	0-81	45
0-19	28	0-40	27	0-61	43	0-82	43
0-20	27	0-41	27	0-62	47	0-83	41
0-21	28	0-42	31	0-63	47	0-84	40
0-22							

This

2/18/10 -

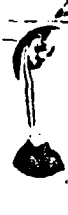
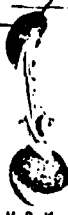
HRM DATA PAOS

Read at 2/18/10

CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0_1	42	0_22	30	0_43	38	0_64	41	0_85	32
0_2	46	0_23	32	0_44	40	0_65	41	0_86	33
0_3	37	0_24	31	0_45	41	0_66	41	0_87	34
0_4	37	0_25	34	0_46	46	0_67	41	0_88	37
0_5	36	0_26	32	0_47	45	0_68	41	0_89	37
0_6	36	0_27	33	0_48	44	0_69	38	0_90	37
0_7	35	0_28	33	0_49	46	0_70	40	0_91	37
0_8	35	0_29	30	0_50	47	0_71	39	0_92	31
0_9	35	0_30	34	0_51	45	0_72	38	0_93	29
0_10	32	0_31	32	0_52	46	0_73	37	0_94	31
0_11	34	0_32	32	0_53	46	0_74	37	0_95	31
0_12	32	0_33	32	0_54	44	0_75	34	0_96	31
0_13	33	0_34	30	0_55	46	0_76	34	0_97	31
0_14	34	0_35	32	0_56	46	0_77	35	0_98	30
0_15	34	0_36	35	0_57	44	0_78	35	0_99	27
0_16	36	0_37	34	0_58	45	0_79	33	0100	29
0_17	32	0_38	33	0_59	47	0_80	33	0101	28
0_18	32	0_39	35	0_60	45	0_81	33	0102	29
0_19	31	0_40	38	0_61	44	0_82	32	0103	27
0_20	34	0_41	37	0_62	45	0_83	34	0104	27
0_21	33	0_42	38	0_63	42	0_84	32	0105	27

9-8

41-C/FIN



2/18/10

INIT MET 3/19/08 -

HRM DATA PAOS

CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0_1	49	0_22	36	0_43	26	0_64	30	0_85	51
0_2	53	0_23	33	0_44	26	0_65	30	0_86	53
0_3	52	0_24	34	0_45	26	0_66	27	0_87	52
0_4	52	0_25	30	0_46	26	0_67	30	0_88	52
0_5	52	0_26	32	0_47	24	0_68	30	0_89	52
0_6	54	0_27	32	0_48	27	0_69	32	0_90	50
0_7	53	0_28	30	0_49	27	0_70	30	0_91	52
0_8	50	0_29	28	0_50	26	0_71	30	0_92	51
0_9	50	0_30	28	0_51	26	0_72	34	0_93	52
0_10	50	0_31	29	0_52	26	0_73	37	0_94	52
0_11	52	0_32	29	0_53	27	0_74	35	0_95	52
0_12	45	0_33	29	0_54	26	0_75	36	0_96	50
0_13	44	0_34	27	0_55	26	0_76	39	0_97	53
0_14	43	0_35	27	0_56	27	0_77	40	0_98	49
0_15	45	0_36	27	0_57	26	0_78	39	0_99	44
0_16	40	0_37	26	0_58	27	0_79	42	0100	45
0_17	41	0_38	25	0_59	25	0_80	47	0101	40
0_18	42	0_39	25	0_60	27	0_81	47	0102	42
0_19	41	0_40	27	0_61	27	0_82	46	0103	40
0_20	38	0_41	25	0_62	26	0_83	47	0104	40
0_21	38	0_42	24	0_63	27	0_84	52	0105	33

8-7

41-C/FIN

Read at 2/07:40

INIT METS		HRM DATA		PADS			
CH	COUNTS/SEC	CH	COUNTS/SEC	CH	COUNTS/SEC	CH	COUNTS/SEC
0-1	35	0-22	51	0-43	33	0-64	23
0-2	34	0-23	59	0-44	32	0-65	23
0-3	35	0-24	53	0-45	32	0-66	23
0-4	35	0-25	50	0-46	32	0-67	25
0-5	36	0-26	54	0-47	30	0-68	23
0-6	40	0-27	52	0-48	29	0-69	24
0-7	41	0-28	48	0-49	28	0-70	25
0-8	41	0-29	49	0-50	27	0-71	29
0-9	41	0-30	47	0-51	27	0-72	27
0-10	40	0-31	43	0-52	25	0-73	23
0-11	43	0-32	46	0-53	26	0-74	23
0-12	45	0-33	47	0-54	26	0-75	23
0-13	45	0-34	49	0-55	24	0-76	24
0-14	46	0-35	52	0-56	25	0-77	23
0-15	45	0-36	52	0-57	26	0-78	34
0-16	47	0-37	40	0-58	24	0-79	24
0-17	48	0-38	47	0-59	23	0-80	24
0-18	44	0-39	35	0-60	23	0-81	25
0-19	49	0-40	33	0-61	24	0-82	22
0-20	57	0-41	36	0-62	24	0-83	22
0-21	57	0-42	30	0-63	25	0-84	25

8-5

41-C/FIN

STUDENT
EXP

ms1



PAYLOAD OPS C/L	STS
	41-C

RME	C360	REF DATA	U300	OPS	WAS	OPS	SMM REF DATA	SMM RETURN	OPS	FSS ACT
------------	-------------	-----------------	-------------	------------	------------	------------	---------------------	-------------------	------------	----------------

PRM

1 Activation & Checkout

Unstow PRM

If second operation, replace, mark and stow used battery

Set Rotary sw - HRS

ON/OFF sw - ON

✓ Display counts down from 9999 and record

MET on PRM DATA PAD when Display = 0.00

- * If displays shows a colon is *
- * blank, set ON/OFF sw - OFF; *
- * replace, mark, and stow used *
- * battery and repeat step 1 *

Report MET to MCC

Restow PRM (leave ON)

2 Data Recording

8-18 hrs after step 1, unstow PRM

Set Rotary sw to appropriate positions

and record display outputs on PRM DATA PAD

Set ON/OFF sw - OFF

Stow PRM

PRM DATA PAD

0.00 MET <u>03/23:41:00</u>		<u>04/19:15:00</u>
HRS	<u>7.95</u>	<u>9.35</u>
CNLS	<u>2.217 E (+) 03</u>	<u>2.110 E (+) 03</u>
RAD	<u>2.34 E (-) 04</u>	<u>2.33 E (-) 04</u>
REM	<u>2.26 E (-) 03</u>	<u>2.35 E (-) 03</u>

OFF 05/04:37 04/12

12-11

41-D/FIN

STUDENT

EXP

RHE

STUDENT EXP/RHE/GAS

05/04:42

05/04:42 activated PRM

05/17:36 deactivated PAM

12.91 HRS

2.489×10^{-3} CNTS

2.76×10^{-4} RAD

2.80×10^{-3} REM

extra run

This Page Intentionally Blank

12-12

12-10

41-D/FIN

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C
RAW DATA FROM STS-41G

orange

INIT MET 1/06:44:26

CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0 -- 1	108	0 - 22	153	0 - 43	50	0 - 64	57	0 - 85	214	COUNTS/SEC			
0 -- 2	109	0 - 23	190	0 - 44	49	0 - 65	61	0 - 86	198				
0 -- 3	161	0 - 24	249	0 - 45	43	0 - 66	66	0 - 87	181				
0 -- 4	293	0 - 25	269	0 - 46	42	0 - 67	76	0 - 88	153				
0 -- 5	454	0 - 26	194	0 - 47	42	0 - 68	88	0 - 89	129				
0 -- 6	516	0 - 27	132	0 - 48	40	0 - 69	107	0 - 90	117				
0 -- 7	462	0 - 28	121	0 - 49	41	0 - 70	127	0 - 91	123				
0 -- 8	284	0 - 29	112	0 - 50	39	0 - 71	146	0 - 92	159				
0 -- 9	196	0 - 30	112	0 - 51	38	0 - 72	164	0 - 93	314				
0 - 10	168	0 - 31	105	0 - 52	39	0 - 73	186	0 - 94	791				
0 - 11	155	0 - 32	102	0 - 53	40	0 - 74	198	0 - 95	1640				
0 - 12	141	0 - 33	95	0 - 54	40	0 - 75	210	0 - 96	2459				
0 - 13	139	0 - 34	92	0 - 55	40	0 - 76	231	0 - 97	2667				
0 - 14	135	0 - 35	85	0 - 56	37	0 - 77	240	0 - 98	2350				
0 - 15	134	0 - 36	79	0 - 57	44	0 - 78	248	0 - 99	2518				
0 - 16	132	0 - 37	72	0 - 58	47	0 - 79	238	0 : 00	1203				
0 - 17	130	0 - 38	71	0 - 59	50	0 - 80	222	0101	399				
0 - 18	137	0 - 39	63	0 - 60	50	0 - 81	217	0102	250				
0 - 19	138	0 - 40	60	0 - 61	52	0 - 82	215	0103	167				
0 - 20	139	0 - 41	55	0 - 62	56	0 - 83	217	0104	136				
0 - 21	144	0 - 42	52	0 - 63	53	0 - 84	217	0105	134				

PL OPS/41-G/ FIN

2

INIT MET 2.03:30.00

HRM DATA PADS

[illegible]

RME

RME/TLD/GAS

INIT MET		HRM DATA PADS									
CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0-1	81	0-22	186	0-43	123	0-64	40	0-85	43		
0-2	82	0-23	157	0-44	121	0-65	38	0-86	42		
0-3	89	0-24	151	0-45	123	0-66	35	0-87	45		
0-4	88	0-25	188	0-46	116	0-67	36	0-88	46		
0-5	92	0-26	127	0-47	112	0-68	36	0-89	51		
0-6	94	0-27	121	0-48	108	0-69	34	0-90	51		
0-7	100	0-28	118	0-49	105	0-70	35	0-91	53		
0-8	102	0-29	123	0-50	96	0-71	38	0-92	53		
0-9	103	0-30	124	0-51	91	0-72	35	0-93	58		
0-10	106	0-31	120	0-52	87	0-73	36	0-94	65		
0-11	111	0-32	121	0-53	80	0-74	37	0-95	65		
0-12	109	0-33	123	0-54	77	0-75	38	0-96	71		
0-13	116	0-34	122	0-55	70	0-76	37	0-97	75		
0-14	115	0-35	137	0-56	65	0-77	36	0-98	18		
0-15	124	0-36	139	0-57	59	0-78	41	0-99	87		
0-16	133	0-37	148	0-58	54	0-79	36	0-100	90		
0-17	140	0-38	152	0-59	51	0-80	40	0-101	99		
0-18	149	0-39	155	0-60	47	0-81	38	0-102	103		
0-19	170	0-40	137	0-61	44	0-82	40	0-103	116		
0-20	200	0-41	128	0-62	41	0-83	41	0-104	116		
0-21	204	0-42	125	0-63	42	0-84	41	0-105	116		

12-8

PL OPS/41-G/ FIN

12-6

PRM

1 Activation & Checkout

Unstow PRM

If second operation, replace, mark and stow used battery

Set Rotary sw - HRS

ON/OFF sw - ON

✓ Display counts down from 9999 and record MET on PRM DATA PAD when Display = 0.00

- 119:41
- * If display shows a colon is *
 - * blank, set ON/OFF sw - OFF; *
 - * replace, mark, and stow used *
 - * battery and repeat step 1 *

Report MET to MCC

Restow PRM (leave ON)

2 Data Recording

8-18 hrs after step 1, unstow PRM

Set rotary switch to appropriate positions and record display outputs on PRM DATA PAD

Set ON/OFF sw - OFF

Stow PRM

PRM DATA PAD

0.00 MET <u>1109:48:00</u>		<u>6110:01:00</u>
HRS	<u>17.65</u>	<u>15.46</u>
CNTS	<u>3.869 E (+) 03</u>	<u>3.166 E (+) 03</u>
RAD	<u>9.70 E (-) 04</u>	<u>7.90 E (-) 04</u>
REM	<u>1.04 E (-) 02</u>	<u>8.33 E (-) 03</u>

12-11

PL OPS/41-G/FIN

13-3

PL OPS/41-G/FIN

APPENDIX D
RAW DATA FROM STS-51A



yellow

**PAYLOAD
OPS C/L**

**STS
51-A**

ONE

THIS

INIT NET 0, 23, 27, 00

NRN DATA PADS											
CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0-1	62	0-22	35	0-43	27	0-64	33	0-85	56		
0-2	60	0-23	31	0-44	29	0-65	34	0-86	56		
0-3	61	0-24	30	0-45	30	0-66	36	0-87	58		
0-4	63	0-25	28	0-46	28	0-67	36	0-88	57		
0-5	56	0-26	29	0-47	29	0-68	35	0-89	56		
0-6	58	0-27	30	0-48	27	0-69	40	0-90	57		
0-7	56	0-28	28	0-49	29	0-70	40	0-91	56		
0-8	58	0-29	27	0-50	28	0-71	43	0-92	52		
0-9	55	0-30	27	0-51	27	0-72	42	0-93	52		
0-10	56	0-31	26	0-52	29	0-73	44	0-94	52		
0-11	57	0-32	25	0-53	30	0-74	46	0-95	47		
0-12	49	0-33	26	0-54	29	0-75	45	0-96	48		
0-13	47	0-34	27	0-55	29	0-76	47	0-97	45		
0-14	42	0-35	29	0-56	28	0-77	50	0-98	43		
0-15	41	0-36	27	0-57	30	0-78	51	0-99	42		
0-16	37	0-37	29	0-58	31	0-79	52	0-100	39		
0-17	39	0-38	27	0-59	33	0-80	53	0-101	37		
0-18	36	0-39	28	0-60	30	0-81	55	0-102	34		
0-19	33	0-40	29	0-61	32	0-82	58	0-103	33		
0-20	34	0-41	28	0-62	33	0-83	57	0-104	33		
0-21	33	0-42	28	0-63	34	0-84	55	0-105	31		

RUE

DNOS

INIT NET 21.39.30

HRM DATA PADS

CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0--1	26	0--22	28	0--43	35	0--64	54	0--85	38				
0--2	24	0--23	26	0--44	39	0--65	56	0--86	34				
0--3	25	0--24	28	0--45	38	0--66	56	0--87	34				
0--4	25	0--25	26	0--46	39	0--67	53	0--88	31				
0--5	26	0--26	29	0--47	40	0--68	56	0--89	30				
0--6	28	0--27	27	0--48	46	0--69	53	0--90	31				
0--7	26	0--28	28	0--49	46	0--70	54	0--91	29				
0--8	29	0--29	27	0--50	45	0--71	52	0--92	29				
0--9	27	0--30	27	0--51	46	0--72	52	0--93	28				
0--10	27	0--31	29	0--52	48	0--73	52	0--94	26				
0--11	27	0--32	30	0--53	49	0--74	50	0--95	25				
0--12	27	0--33	30	0--54	47	0--75	47	0--96	24				
0--13	27	0--34	28	0--55	50	0--76	48	0--97	25				
0--14	25	0--35	32	0--56	50	0--77	46	0--98	24				
0--15	29	0--36	32	0--57	52	0--78	45	0--99	24				
0--16	26	0--37	31	0--58	52	0--79	43	0100	24				
0--17	29	0--38	32	0--59	52	0--80	45	0101	24				
0--18	28	0--39	33	0--60	54	0--81	42	0102	25				
0--19	27	0--40	35	0--61	52	0--82	39	0103	24				
0--20	29	0--41	35	0--62	55	0--83	40	0104	25				
0--21	27	0--42	37	0--63	54	0--84	37	0105	23				

INIT MEV 4, 1 9.35:00

NRN DATA PADS							
CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0-1	29	0-22	56	0-43	47	0-64	26
0-2	32	0-23	55	0-44	46	0-65	25
0-3	32	0-24	56	0-45	42	0-66	25
0-4	31	0-25	56	0-46	42	0-67	25
0-5	34	0-26	54	0-47	39	0-68	25
0-6	38	0-27	57	0-48	37	0-69	27
0-7	40	0-28	57	0-49	37	0-70	25
0-8	40	0-29	57	0-50	34	0-71	25
0-9	38	0-30	56	0-51	32	0-72	25
0-10	42	0-31	57	0-52	30	0-73	27
0-11	44	0-32	57	0-53	32	0-74	29
0-12	45	0-33	54	0-54	29	0-75	30
0-13	48	0-34	56	0-55	31	0-76	30
0-14	49	0-35	55	0-56	27	0-77	30
0-15	46	0-36	53	0-57	28	0-78	30
0-16	48	0-37	49	0-58	28	0-79	32
0-17	53	0-38	52	0-59	28	0-80	33
0-18	51	0-39	51	0-60	25	0-81	35
0-19	51	0-40	50	0-61	25	0-82	37
0-20	51	0-41	47	0-62	25	0-83	37
0-21	54	0-42	46	0-63	24	0-84	38

AD-A154 676

RESULTS FROM RADIATION MONITORING EQUIPMENT EXPERIMENTS
ON STS-41C 41D \$1... (U) AIR FORCE TECHNICAL APPLICATIONS
CENTER PATRICK AFB FL S E CASH ET AL. 18 APR 85
AFTAC-TR-85-4

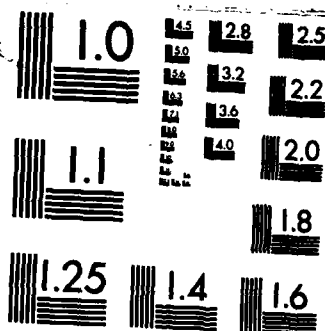
2/2

UNCLASSIFIED

F/G 18/4

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

INIT NET 61 18.03.00

INIT		NET		61		18.03.00		HRM DATA		PADS	
CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC	CHANNEL	COUNTS/SEC
0-1	30	0-22	46	0-43	29	0-64	25	0-85	28		
0-2	26	0-23	45	0-44	30	0-65	25	0-86	28		
0-3	27	0-24	41	0-45	29	0-66	24	0-87	27		
0-4	28	0-25	44	0-46	27	0-67	25	0-88	29		
0-5	29	0-26	47	0-47	26	0-68	24	0-89	28		
0-6	30	0-27	47	0-48	27	0-69	24	0-90	29		
0-7	29	0-28	45	0-49	28	0-70	24	0-91	28		
0-8	29	0-29	44	0-50	26	0-71	25	0-92	29		
0-9	31	0-30	45	0-51	25	0-72	25	0-93	28		
0-10	33	0-31	43	0-52	26	0-73	27	0-94	31		
0-11	34	0-32	41	0-53	25	0-74	27	0-95	29		
0-12	37	0-33	41	0-54	24	0-75	26	0-96	32		
0-13	35	0-34	40	0-55	23	0-76	26	0-97	31		
0-14	38	0-35	40	0-56	24	0-77	26	0-98	35		
0-15	37	0-36	39	0-57	25	0-78	28	0-99	32		
0-16	39	0-37	35	0-58	25	0-79	26	0-100	35		
0-17	43	0-38	37	0-59	26	0-80	26	0-101	34		
0-18	42	0-39	34	0-60	24	0-81	27	0-102	37		
0-19	45	0-40	33	0-61	25	0-82	25	0-103	37		
0-20	44	0-41	31	0-62	24	0-83	27	0-104	38		
0-21	44	0-42	31	0-63	27	0-84	28	0-105	36		

2-8

PL OPS/51-A/BAS

2-6

PL OPS/51-A/BAS

PRM

1 Activation & Checkout

Unstow PRM

If second operation, replace, mark and stow used battery

Set Rotary sw - HRS

ON/OFF sw - ON

✓ Display counts down from 9999 and record MET on PRM DATA PAD when Display = 0.00

- * If display shows a colon is *
- * blank, set ON/OFF sw - OFF; *
- * replace, mark, and stow used *
- * battery and repeat step 1 *

Report MET to MCC

Restow PRM (leave ON)

2 Data Recording

8-18 hrs after step 1, unstow PRM

Set rotary switch to appropriate positions and record display outputs on PRM DATA PAD

Set ON/OFF sw - OFF

Stow PRM

PRM DATA PAD

0.00 MET 0123:16:00		208:04:43
HRS	14.13	13.47
CNTS	2.874 E (±) 3	2.367 E (±) 3
RAD	3.07 E (±) 4	3.68 E (±) 4
REM	2.98 E (±) 3	3.47 E (±) 3

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7-85

DTIC